

# *Protecting the environment during armed conflict in the Mediterranean*

*The 1990–1991 Gulf War, the 2006 Lebanon War, and the Syrian Civil War*

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**Veronika Annamária Tóth**

**Abstract:** The purpose of this research is to investigate and identify the environmental impacts and the environmental protection of international armed conflicts. Direct and indirect environmental damage caused by armed conflicts, can threaten people's health and security. The paper consists of three main chapters divided into eight subchapters. Chapter 1 begins with an analysis of environmental impacts of warfare. In Chapter 2, I will give a review of the evolution of International Humanitarian Law and International Environmental Law and their application for environmental protection in times of armed conflicts. Chapter 3 will focus on the Mediterranean region, notably on the 1990-1991 Gulf War, the 2006 Lebanon War and on the current Syrian crisis. The main aim is to draw attention to various environmental impacts of armed conflict and remind individuals – working in the fields of environmental protection and international law – that we are living in crucial times due to the climate change and the development of modern warfare.

**Keywords:** environmental protection, international law, modern warfare, weapons of mass destruction, Mediterranean region, Syrian war

**Author:** Veronika A. Tóth, BA in International Studies (Eötvös Loránd University, Budapest), MA in Advanced European and International Studies (Centre International de Formation Européenne, Nice). Her main professional interests lie in security policy, international law, and languages.

## **0.1. Introduction**

If we look through history, humans have always fought wars, and often the environment has been used as a weapon, as a tool to win a war. Not only human beings, soldiers and civilians suffer from armed conflicts, but also the environment, our planet. We can claim that the environmental damage of warfare has a long history. Even at the very beginning, when military technology was not advanced, in 1290 BC the Assyrians used the “strategy of salting the earth” in Mitanni in order to gain power over the enemy. (Wyatt, 2010, p.596) During the Third Punic War, the Roman legions spread salt around Carthage for tactical reasons as well. In the second half of the 20th century, the Vietnam War and the Gulf War received much attention as entire ecosystems went through deterioration due to modern military technology. (Austin and Bruch, 2000, p.1)

Two developments have forced the international community to rethink the attitude towards the environment in wartime. First of all, the rise of environmentalism and environmental studies in the second half of the twentieth century made realise scientists that our planet is threatened. The climate change should be on the list of priorities to deal with, as we can witness serious consequences such as the rise of sea level, the disappearance of various species, the shrinkage of forests, etc. In parallel, during the last six decades the environmental law has developed at local, regional and international level as well. However, Adrian Loets argues that the law of war regarding the environmental protection in most cases is “ineffective and fragmented”. (Loets, 2012, p.127) In the majority of the cases, serious environmental issues of armed conflict do not get much public attention; however, I believe that the legal framework for protecting the environment in times of armed conflict has developed. The second development is related to the advances in military technology, as new weaponry innovations may seriously threaten the environment. Direct and indirect environmental damage caused by armed conflicts can also threaten people’s health and overall security, for this reason further research is needed in the field.

## **0.2. Scope of the research**

The purpose of this paper is to investigate and identify the present relationship between armed conflict and the environment. With the escalation of the media and Internet the information is spreading fast, but despite this, the environmental impacts of wars are very little known and

even less understood. During our everyday life we hear about armed conflicts in the news, we have often been talking about warfare; however environmental consequences are never mentioned. I believe that it is necessary and worthwhile to do a deeper research on the linkage of environment and armed conflicts. I have had the possibility to spend three months in Nice, Tunis and in Istanbul during my studies at the Mediterranean branch of the *Master in Advanced European and International Studies* at *Centre International de Formation Européenne*. For this reason, my research will focus on the Mediterranean region, notably on the 1990-1991 Gulf War, the 2006 Lebanon War and on the current Syrian crisis.

Consequently, the objective of this paper is to investigate the environmental impacts and the environmental protection of international armed conflicts. The overall research questions that should be answered through my research will be as follows:

- What are the environmental impacts of armed conflict in short and long term?
- How does international law – *International Humanitarian Law* (IHL) and *International Environmental Law* (IEL) – protect the environment during international armed conflicts?
- Why is there no permanent international mechanism dealing with compensation claims for environmental damage sustained during international armed conflicts?

In this paper, I am focusing on the linkage between armed conflict and the environment, it is crucial to clarify their meanings. During my research, my attempt is to explore the understanding of the following key definitions: “*modern warfare*”, “*weapons of mass destruction*”, and “*environmental damage*”. It is also important to clarify terms that are used specifically in the law relating to armed conflict. Some scholars refer to the “*law of war*” and others to the “*law of armed conflict*”. Due to the limits of length of this paper, I will mainly analyse “*International Humanitarian Law*” and “*International Environmental Law*”, and for this reason I will not conduct deep research in other fields of law such as International Criminal Law and Human Rights Law.

This paper analyses and interprets international treaties and conventions, so sources of treaty and customary laws are the main focal points. I will also examine the practices of the international community throughout case-studies of selected armed conflicts mentioned above which have caused serious environmental damage. To conduct my research, a wide variety of sources and materials have been collected. The prediction to answer my questions will be

supported through available books and articles. Numerous scholars have already worked on the protection of the environment in times of armed conflict, but the field is big and it is waiting to be discovered. The most crucial literature I used during my research is the following books: *The Oxford Handbook of International Law in Armed Conflict* (Calpham and Gaeta, 2014, p.1008) and *Armed Conflict and Environmental Damage*. (Jha, 2014, p.374) In addition, the interview with Amanda Kron was very helpful and inspiring, as she gave me a brief insight about the United Nations Environment Programme and about the International Law Commission's work in regard to the environmental protection in times of armed conflict.

### **0.3. Structure of the analysis**

The paper consists of three main chapters divided into eight subchapters. Following this introduction, Chapter 1 begins with an analysis of environmental impacts of warfare. In this chapter I will also identify how the development of the technological capacity and military activities damages the environment.

In Chapter 2, I will give a review of the evolution of International Humanitarian Law and International Environmental Law and their application for environmental protection in times of armed conflicts. The environment in armed conflict is protected through conventions and customary rules of international law, but in practice, however, these provisions have not always been effectively implemented or enforced. My main goal is to identify the current gaps and weaknesses within the existing legal framework. The *United Nations Environment Programme* (UNEP) is playing a major role in promoting new thinking about environmental aspects of armed conflicts, but I will also evaluate the role of other institutions such as the *International Committee of the Red Cross* (ICRC), and the *International Law Commission* (ILC).

In Chapter 3, I will describe the environmental consequences of three armed conflicts: 1991 Gulf War, Lebanon 2006 War, and the current Syrian crisis. Last but not least, after the conclusion, I will try to give recommendations in improving environmental protection of armed conflicts on an international level.

My main aim is to draw attention to various environmental impacts of armed conflict and remind individuals – working in the fields of environmental protection and international law –

that we are living in crucial times due to the climate change and the development of modern warfare. My paper hopes to offer a small contribution to improving the world we live in.

#### **0.4. Theoretical approach**

Concerning the theoretical framework of my research, I am going to rely especially on environmental security studies due to the fact that regional and global security is also linked to climate change and environmental damage. Eric Laferrière and Peter J. Stoett argue in their book entitled *International Relations Theory and Ecological Thought* that “*IR theory does not yet recognise the value of ecological thought as political theory.*” (Laferrière and Stoett, 1999, p.19) However, liberal thinkers argue that environmental issues can be relevant for different national and international actors or even for states to cooperate. (Laferrière and Stoett, 1999, p.20)

Theorists in the realist traditions of international relations that states as the only important actors are seeking to maximise their own power and security. For realists the traditional concept of security is associated with military threat. This was the case during the Cold War period, in the bipolar system the nuclear weapons proliferation was in the focus. After the end of the Cold War concerns over climate change and environmental questions emerged in the arena of international politics. It is about global security as climate change threatens every civilisation as it menaces the capability to support human life. Marc A. Levy argues that environmental degradations can have a direct and an indirect threat to national security. (Gellers, 2010, p.5) The negative effects of climate change can be already observed, so its importance should not be underestimated. Some scholars argue that the international community is not fighting enough against the war on human made climate change.

Thus, realists claim that national interests have a crucial role in shaping the environmental negotiations and the agreements within the field of international environmental law. For states to give their sovereign powers to a global authority is challenging and in the most cases an impossible issue. Institutionalists believe states can cooperate in environmental law-making, in order to find solutions to global and collective problems. In addition, scientists have an important role as they are attempting to raise environmental awareness on an international level. (Armstrong, Farrell and Lambert, 2007, pp.270–271)

The authors of the book titled “*International Law and International Relations*” argue that “environmental law-making does not fit easily into a single theoretical perspective”. (Armstrong, Farrell and Lambert, 2007, pp.269–270) Environmental issues require different regulatory solutions, in some cases they should be solved on a national level or ICJ hearing. However, fighting against climate change requires political willingness which is very challenging. (Armstrong, Farrell and Lambert, 2007, pp.269–270)

Environmentalists claim that “securitising” the environment is an important step as it forces states to deal with issues that would otherwise not be considered. Since the 1970’s, discussion on environmental issues in politics has been increasing. Since the late 1980’s the environment has been “securitised” in different contexts such as public policy, popular media and academy as well. (Peoples and Vaughan-Williams, 2010, p.94) The concept of security changed after the Cold War, the so called “environmental security” emerged but today it should be rethought. Due to the fast globalisation, the technological changes and the increased use of resources have also an impact on the geography. We can witness a shift from environmental security discussions into climate security discussions. Nick Mabey argues that regional and global security is completely linked to climate change too. (Williams, 2013, pp.312–321) He claims that it will have an impact on the strategic security environment, which means that alliances and economic relationships will also change. We should admit that states do not take the environmental long-term risks enough seriously, and currently it is not on the list of priorities. Armed conflicts mainly depend on political institutions and on elite actions, but the environmental degradation might also lead to conflicts. (Williams, 2013, pp.312–321)

In 2006 former US Vice President Al Gore wrote a book entitled “*An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do about It*” (published by Rodale Books Publishing House) and made a documentary film entitled “*An Inconvenient Truth*”. As reported by Al Gore, it is necessary to deal with human-induced climate change, since it is a moral issue, and its impact will influence future generations’ daily life. He argues that “*the environment is becoming a matter of national security – an issue that directly and imminently menaces the interests of the state or the welfare of the people*”. (Weber, 2010, pp.190–199) According to him human-environmental conflict is more crucial nowadays than human-human conflict. Gore might be considered as a typical idealist as he seems to believe that humans are good by nature and that progress is possible. He admits that conflicts are not inevitable, but he thinks that the international community can fight against global problems. Consequently, he urges cooperation and morality in order to attain human security. Similarly,

in the documentary made by Gore says that “human-made climate change is an inconvenient truth that can be solved by humans because it is a human-made problem”.

Green theory claims that all the risks and dangers today are caused by humans, due to the mechanisms of how states and cultures use the environment. In order to make our world safer for future generations, there must be a transformation in the human-nature relationship. Environmental theorists argue that the human-centred, “anthropocentric” attitude about the world should change to an environmentally-centred, “ecocentric” orientation. Ecocentrism perceive that “humans are part of nature, not above nature”. According to Matthew Paterson, the earth is in danger as it has a limited capacity to preserve human beings. Thus the applications of green politics are more than required. He declares that a new global order should be shaped, which would be more decentralised and where states would have less power. He refers to the slogan of “*think globally, act locally*” (Weber, 2010, pp.190–199), which also inspires me in the research of environmental protection of armed conflicts.

Environmental issues and IR are related; even the subject of climate change is getting more and more attention on the political arena, the environmental impacts of armed conflicts are a neglected topic. In consequence, in the following chapter I will give a review about the environmental impacts of armed conflict.

## **CHAPTER 1 – The environmental impacts of war**

Warfare is an old phenomenon; societies are continually involved in warfare which means that the environment is very much likely to continue to suffer, for this reason the experts in the field should do further research on taxonomic database. Natural resources are often manipulated by militaries for strategic purposes and when the environment is under pressure, the environmental degradation may pose a security threat to the environment and to human’s life as well. However, doing field research on the environmental impact of warfare can be problematic, as in conflict zones and in military bases the access may be restricted; not even mentioning the attached risks and the danger. In some armed conflicts the exact place and the time is unknown, and without having pre-conflict data it is hard to compare the consequences of warfare. (Lawrence, 2015) In this chapter, I will tend to analyse the environmental impacts of different modern warfare, and then I will look at the environmental threats caused by weapons of mass destruction.

It is estimated that during the 20th century, 175 million people died due to warfare, which is considered to be the history's most "bloody century". (Doolittle, 2015) The technology of warfare developed, which poses also a serious threat to the environment. The following question arises: What are the short and long term impacts of warfare? In the last few decades, this question has received attention from many scientists and researchers. Do political and military leaders involve environmental issues in times of armed conflicts? Even though numerous countries are part of international treaties which prohibit the damage of the environment in times of war, but in most cases the military and the army manuals neglect the environmental impacts. The decisions are generally made due to the cost-benefit analysis, which refers to the expected gains and to the expected costs. (Reuveny et al. 2010, pp.758–759)

### **1.1. Modern warfare**

The definition of armed conflict refers to an act of war which is carried out by at least two governmental groups or non-governmental groups. "Armed conflicts involve weapons, the use of which typically results in the introduction of heat, explosive force and a range of radiologically or chemically toxic pollutants into the environment." (Weir, 2015) Some scholars, such as David P. Barash (2013) and Douglas P. Fry (2013) argue that war is part of human nature and if we look through the history, we can observe that during every century different types of armed conflict occurred all over the world. According to the Heidelberg Institute for International Conflict Research the following causes lead to conflict: ideological change, self-determination, national control, resources, territory, control of part of country, control of another country. (Heidelberg Institute, 2008) In broad terms, the causes of war remain very much similar, however the tools and of warfare developed especially during the last century.

The Institute for Economics and Peace released a work in 2014, that only "11 countries in the world are not involved in any conflict– despite this being the most peaceful century in human history". (Mathiesen, 2014) Even countries which are not engaged directly in armed warfare, the majority has military forces in order to maintain security. (Mathiesen, 2014) Dr. U. C. Jha highlighted the importance of the military in the book titled *Armed Conflict and Environmental Damage in 2014*: "today, 165 of 196 sovereign states maintain regular armed



forces and about 10 percent of all government expenditures in the world is devoted directly to maintaining these regular armed forces.” (Jha, 2014, pp.180–181)

In on a global scale, in the year 2000, \$798 billion was spent on the military. Since the end of the Cold War it has been the first time that so much spending was allocated to the military sector, which means that nations spent less on social needs in reducing poverty and hunger, and investing in education. (Doolittle, 2015) Recently, the United States spent the most on defence on a global scale, twice as more as China, standing on the second place. The US accounted \$569bn a year on defence, China spent \$176bn in 2014, but the budget increased to \$191bn in 2015. After US and China, the United Kingdom, Russia and France spent the most on defence. In the recent years the global tensions are escalating, also due to the Syrian conflict, we can observe that many involved countries are contributing more on the military sector. (Kirk, 2015) We must not forget that even the maintenance of the militaries can cause a serious threat to the environment and that the US consumes the most of the oil in the world and its biggest user is the Pentagon. (Doolittle, 2015)

### **1.1.1. Typology of armed conflicts**

In military operations aircraft is often used, however aerial activities can produce noise pollution, which can have a negative impact on the wildlife. Sonic booms, jet afterburners, rotary pulses are considered to be bursts of noise, and they can cause severe effects on different species. The aerial assault weapons can be divided in four categories such as: high explosive fragmentation, incendiary weapons, enhanced blast munitions, and defoliants. Naval operations and naval conflict have different impacts on the marine environment. During warfare, naval blasts and sonar operations can influence the everyday life of different species of fish, reptiles, birds, and marine mammals. Sunken naval craft may cause also water contamination in the long-term. Overall, such events have the potential to damage wildlife leading to species extinction and habitat degradation. (Lawrence, 2015)

Terrestrial conflict, or in other term ground warfare takes place often at biological hotspots, and it may change the natural landscape or it can even destroy it. In addition, terrestrial conflicts can also have a negative impact on the wildlife. In general, explosive techniques cause the biggest damage to the ecosystem across the world. For example, the contamination caused by landmine explosions can remain for several decades. The outcome can be the

destruction of vegetation and the degradation of soil structure, which can influence the extinction of specific species. In the past, especially during the World War I and World War II artillery fire intensely damaged the nature. Soldiers often used artillery fire, especially at forests, which was very much devastating for the ecosystems, as the vegetative did not grow. Moreover, military and civilian infrastructure can be also targets during terrestrial conflicts, and for example the destruction of hydropower dams can cause severe ecological consequences such as mortality of species. (Mathiesen, 2014)

### **1.1.2. Military infrastructure and training activities**

The development and the use of military training bases have also an impact on the environment. While working on the infrastructure projects, in many cases, one can observe habitat degradation, soil erosion and chemical contamination. The natural landscape changes as the vegetation and trees are cut out for the military bases. The construction and the maintenance of naval ports and shipyards can damage the water sources and the surrounded vegetation. The local water sources can be affected by chemical contamination due to waste dumping and accidental chemical spills. The maintenance of military training bases produces enormous hazardous wastes, including heavy metals, paints, fuel, and oils. It is important to highlight that water contamination and habitat degradation have a direct impact on biodiversity. (Mathiesen, 2014)

Training activities can cause similar environmental degradation such as landscape and vegetation destruction, chemical and heavy metal contamination, and accidental killing of endangered species. Live-fire training includes advanced high-power weaponry such as artillery, multiple-launch rocket systems, hand grenades, and anti-tank weapons. These types of weapons damage the soil, the groundwater and the surface of water sources as well. The armoured manoeuvre training is designed to be one of the most damaging tools for the nature, as it can change the soil structure and chemistry. (Mathiesen, 2014)

During military training fighter jets and helicopters are also used. The most negative impact due to aviation exercises and flight manoeuvres is the hitting and killing of birds. For example, during the period of 1985 and 1998, the United States Air Force registered yearly around 2,700 aviation-related bird strikes, which was followed by aircraft repair costing \$35 million US dollars. Naval military training exercises can cause damage to the marine life. The

main source of the damage is the noise pollution, which is provoked by mechanical and propeller noise, explosive detonations, and the operation of sonar technologies. (Mathiesen, 2014)

## **1.2. Weapon of mass destruction**

During warfare different weapons may be used, but the “Weapons of Mass Destruction” (WMD) can cause the biggest damage on the environment, for this reason in the international politics it is a central issue. The term weapons of mass destruction include nuclear (NW), biological (BW), and chemical weapons (CW). Their common features are “*potential for large-scale destruction and the indiscriminate nature of their effects*”. (Reed, n.d.)

Nuclear, radiological, biological or chemical (NRBC) events or NRBC agents may have a very negative impact to health and to the environment as well, however, in many cases it is difficult to recognise the effects as they can be “*invisible, odourless or impalpable*”. (ICRC, 2013b) During an NRBC event the mentioned hazardous materials can be released by an unintentional or by an intentional way. We can talk about the unintentional release if it caused by a “*disease, natural disasters, transport or industrial accidents, collateral damage in a conflict, remnants or contaminants from past use of such agents, etc.*” (Reed, n.d.) Overall, an intentional release may occur during a military action or attack by individuals or groups in purpose with the objective of causing death or to terrorise. (Reed, n.d.)

### **1.2.1. Nuclear weapons**

Nuclear weapons are considered to be the most threatening means of warfare as they can damage whole cities, by killing millions of people and destroying the ecosystem which would suffer in the long-term, the consequences of which would be felt by future generations. In the history nuclear weapons were used twice as a tool in a war, in Hiroshima and Nagasaki in the year 1945, causing 140,000 and 70,000 deaths in the following year. (Doolittle, 2015) In general, nuclear weapons are mainly associated with the Cold War, but we should highlight that many states are still producing or stockpiling nuclear warheads. It is difficult to give exact numbers, due to governmental secrecy, however much is publicly known. It was estimated that 17,000 nuclear weapons exist, as of 2014. Not surprisingly, in 2014, the United

States and Russia were the owners of almost 93% of these weapons, but France, the UK, China, Pakistan, India, Israel and North Korea also controlled nuclear warheads. Some argued that around 150-240 US nuclear weapons were stationing in the following countries: Italy, Turkey, Germany, Belgium and the Netherland. (Egeland, 2014, p.3) It is also assumed that Israel has national stockpiles of nuclear weapons, which highly influences the geopolitical situation in the Middle East. (Reed, n.d.)

Nuclear agents are “radioactive materials generated by nuclear fission or fusion, such as those associated with an operating nuclear power plant or with the explosion of a nuclear weapon.” (ICRC, 2013b) Regarding the explosive part of nuclear weapons, they include uranium or plutonium which contains nuclear elements. Uranium is a natural chemical element, while plutonium is created in an artificial way. During production and testing, due to human error, such radioactive and toxic materials may be released. There are different impacts on the environment in consequence of the detonation of nuclear warheads: thermal impacts, blast effects and radiation impacts. The most severe consequences are when the vegetation is burnt, the soil is destroyed, and some species dies. (Lawrence, 2015) Underground test may damage seriously the soil and groundwater; however the major problem is also that it is very expensive to clean up nuclear facilities. (Jha, 2014, p.182)

Since 1945 more than 2,000 nuclear tests have been conducted around the world, which may lead us to think about the environmental concerns. One should mention that even nuclear waste poses severe threat to the nature, as it will remain for hundreds or even millions of years. The main problem is, that there is no 100% safe place to store it. The consequence of the use of nuclear weapon is unimaginable, as the ozone layer could be increasingly damaged, and it would lead to the drop in global temperature, causing serious problems for the production of vital crops. (Egeland, 2014, pp.10–11) The term “*nuclear winter*” refers to a catastrophe when the impacts on nuclear warfare would block the sun’s light for several weeks, which would threat everything and everyone. (Doolittle, 2015)

On the one hand, the disarmament is the best solution for the protection of the environment, but on the other hand, achieving such an objective poses a complicated challenge. Unfortunately, the *Comprehensive Nuclear Test Ban Treaty* (CTBT) has not entered into force yet, as US, China, Israel, India and Pakistan still have not ratified it. (Egeland, 2014, p.8) Ban Ki-moon, UN Secretary General encourages the General Assembly on the 5th of September 2013, “*we should all remember that terrible toll of nuclear tests (...) It is time to*

*address the horrific human and environmental effects of nuclear tests through a global ban, the most reliable means to meet these challenges”.* (Egeland, 2014, p.9)

### **1.2.2. Chemical weapons**

Chemicals are often used in warfare in order to gain strategic, tactical advantages by changing the landscape. During the twentieth century, several countries have produced them in big amount. If we compare it to nuclear weapons, it is much easier and also cheaper to create chemical weapons. Chemical agents are *“naturally occurring or man-made toxic substances used in everyday life, industry and medicine, or for law-enforcement or military purposes.”* (ICRC, 2013b) Chemical agents can be divided into four categories: pulmonary agents, blister agents, blood agents and nerve agents. The mentioned agents have serious effects on health, in many cases causing death. (Reed, n.d.) Chemicals, such as hydrocarbons and metals can have toxic impacts on the environment, and it can remain for a long time in soil, water and in the tissues of animals. Such weapons can be buried on land or dumped into water intentionally. It is important to highlight that it is not just difficult but also dangerous to collect CWs in order to destroy them. (Lawrence, 2015) Abandoned chemical weapons pose serious threat to humans and also to the nature. During the period of 10 years from 1985 to 1995, according to a Dutch fisherman at least in 350 cases chemical weapons were left in the Baltic Sea, contaminating the maritime environment. Chemical agents, such as mustards and lewisite may remain in the environment during several decades, damaging the soil and ground water. (Harigel, 2001)

Herbicides are also used in warfare in order to alter landscape and to reduce visibility. During the Vietnam War; the US used it which can be also considered as a chemical weapon (see Appendix I.). Agent Orange is a dioxin-based herbicide, and during the war, it damaged around 2,600 million hectares of territory in Vietnam, Cambodia and Laos. Between 1962 and 1971 at least 72 million litre herbicides were spread through South Vietnam, causing serious damage to the environment, especially to the trees and vegetation. (Harigel, 2001)

Depleted uranium is chemically toxic, but it can be considered as a chemical and as radiological weapons as well. It can have serious impacts on both on human and on the nature. Uranium toxicity can affect terrestrial and freshwater plants, and also mammals. (Lawrence, 2015) The US started to use it in the 1950's as it is “extremely dense, pyrophoric,

cheap, and available in high quantities”. (Harigel, 2001) Today, many states possess or construct DU, such as: United Kingdom, France, Russia, Greece, Turkey, Israel, Saudi Arabia, Kuwait, Bahrain, Egypt, Thailand, Taiwan and Pakistan. Depleted uranium was employed in big amounts during the 1991 Gulf War, which will be discussed in the third chapter and during the 1999, during the Kosovo War. (Harigel, 2001)

The *Chemical Weapons Convention* (CWC), entered into force in 1997 prohibiting the use and production of chemical weapons. The international agreement also urges the states to eradicate their chemical weapons. In 2015, 192 States were signatories; however, there are still four UN states which are not part of the treaty: Egypt, Israel, North Korea and South Sudan. (United Nations Treaty Collection, n.d.)

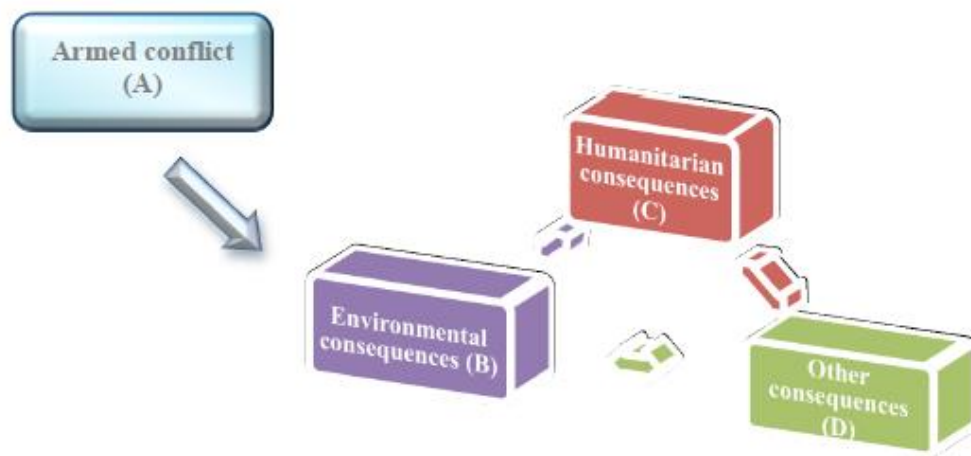
### **1.2.3. Biological weapons**

The opinion of the use of biological weapons (BW) differs on the international arena. With the development of technology it is getting easier and faster to manufacture such weapons. (Harigel, 2001) Usually BWs include two parts, “weaponised agent and a delivery mechanism”. (United Nations Office at Geneva, n.d.) They are generally used for tactical and strategic reasons during warfare. In addition, it was also used for political assassinations, for environmental catastrophes or just simply for spreading fear. (United Nations Office at Geneva, n.d.) Biological weapons can be used in three different ways. First of all, they can be used in order to contaminate the enemy’s food stocks or water supplies. Secondly, infected vectors, such as mosquitoes or fleas can be spread out, causing serious bites to the enemy. Lastly, if aerosol cloud is created, the inhalation by the victims can cause serious health problems. (Reed, n.d.)

### **1.3. Short and long term impacts**

For political and military leaders the national security is the priority, for this reason, in most of the cases the environmental consequences of war does not have an impact in their strategy. Destroying environment can be a tool in order to win the armed conflict. (Reuveny et al. 2010, pp.750–751) In a research done by the Stockholm International Peace Research Institute indicates that “*the technology of weapons has increased, the amount of*

*environmental damage resulting from warfare is also escalating*". (Jha, 2014, p.19) As it was pointed out in a research conducted by the International Law and Policy Institute in 2014 "the causal relationship between armed conflict, environmental damage, and adverse humanitarian consequences are complex and intertwined." (ILPI, 2014, p.12) The mentioned casual relationship can be illustrated by the model below. (ILPI, 2014, p.12) Environmental effects of armed conflict can be either *direct* or *indirect*. Setting fire in the nature is considered to be a direct "scorched earth tactic". In times of armed conflict people may be obliged to displace and due to their over-exploitation of resources the environment can be damaged indirectly. (ILPI, 2014, p.13)



**Figure 1:** Model – Causality flows (ILPI, 2014, p.12)

On the international institutional level the environmental awareness is increasing from year to year. Different national and international organisations are providing research papers and analyses on the environmental impact of armed conflict. Even the United Nations Security Council discussed the correlation between armed conflicts and climate change, and six areas were identified: (1) border disputes, (2) migration, (3) energy supplies, (4) resource shortage, (5) societal stress, (6) humanitarian crises. (Jha, 2014, p.13)

During the interview with Amanda Kron (2016), she placed emphasis on her work in the Post-Conflict and Disaster Management Branch of UNEP with regard to the protection of the environment in relation to armed conflicts. The UNEP-PCDMB did a work on the environmental impacts of armed conflicts, and it was concluded in six categories.

- 1) Bombs, oil fires and conflict in industrial areas lead to toxic hazards and contamination (Kosovo).

- 2) Armed conflicts generate flux of migration, which may cause the depletion of natural resources. There is a high pressure, especially on forests, land, water and wildlife.
- 3) Intentionally or unintentionally military operations can lead to deforestation (Vietnam).
- 4) Landmines, cluster munitions, and depleted uranium produces toxic elements causing the ecosystems more fragile. In addition, resource management and ecotourism can be very much affected in a negative way.
- 5) Warfare pollutes the air, water and the soil.
- 6) During armed conflicts the breakdown of law and order can be witnesses and in result protected areas and species may become more vulnerable to exploitation. (Jha, 2014, pp.26–30)

In times of armed conflicts, military and the non-state actors often damage the environment with the objective of depriving the enemies cover, food and water supplies. The damage caused by warfare has a big impact on the global warming, food and grain production, water resources and infrastructures. (Jha, 2014, pp.9–10) During military activities in order to displace people and weapons a lot of fuel and hydrocarbon resources are used, which can lead to oil and gas contamination. (Lawrence, 2015)

The environmental impacts of warfare can defer in less developed countries (LDCs) and in developed countries (DCs). Armed conflicts increase CO<sub>2</sub> emissions, and we should not forget that CO<sub>2</sub> is the most crucial greenhouse gas provoking climate change. The deforestation increases in the case if the war occurs at home, and naturally the forests grow in case if the armed conflict takes place abroad. Forests are responsible for storing the rain on the ground, and the consequences of deforestation lead to land erosion and to the reduction of freshwater stocks. (Reuveny et al. 2010, pp.750–751)

Also, the location of warfare has a very big impact on the environment. Even if the war takes place abroad, it can still damage the country's ecological system. While fuel and troops leave the county, it can lead to the decline of different domestic sectors in a consequence of labour shortage. In addition, the military industry and the production of war supplies may increase. The economic outlook of DCs and LDs differ, and for this reason the environmental impact of wars is also different. In the case of DCs, the countries are more industrialised which means that they have bigger transportation networks than LDCs leading to the assumption the CO<sub>2</sub> emissions also vary. Also, it is important to highlight that LDCs are more involved in warfare



than the DCs, which means that the environmental impacts of armed conflicts are more severe in LDCs. (Reuveny et al. 2010, pp.750–751)

Today, many countries in Africa, Asia and in the Middle East are facing serious damages due to the extreme weather conditions. For example, drought and flooding may cause food shortages, desertification, population dislocation and mass migration. All these phenomena would cause severe security challenges to the governments. (Jha, 2014, p.13) The term “*environmental refugees*” refers to the refugees who flee their homes due to environmental degradation such as: “*resource scarcity, outbreaks of infectious disease, toxic contamination, ozone depletion, global warming, water pollution, soil degradation and loss of biodiversity*”. Environmental refugees are already posing threats and in the long term, it is argued that the environmental security will be included to the “*traditional visions of state security*”. (Kiss and Shelton, 2004, pp.755–757)

In order to conclude the first chapter, it is clearly seen that armed conflicts will still occur in the future. The environmental degradation due to armed conflicts poses a more serious threat as the military technology advances. In case if nations reduced their dependence on the rule of force and the de-militarisation process would be achieved, the world would become more peaceful and it would have a positive impact on our lives and, of course, on our environment. Even though biological and chemical weapons usage is restricted by international humanitarian law, we can see that in many armed conflicts the weapons of mass destruction were used in order to win over the enemy. In humanitarian law, there are only general rules, which regulate the use of nuclear weapons. In the following chapter I will make an attempt to analyse how international law protects the environment during warfare.

## **CHAPTER 2 – Legal protection**

*“It is often noted that the environment needs to be protected in order to achieve the goal of protecting civilians and their livelihoods. But it is likewise pointed out that the environment as such needs protection”* (Bannelier-Christakis, 2013, p.131; Marie Jacobsson<sup>1</sup>)

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<sup>1</sup> Note: Marie Jacobsson – ILC, Special Rapporteur on the topic “Protection of the environment in relation to armed conflicts”

The protection of the environment in a situation of armed conflicts is a very complex issue, for this reason it is not enough only to analyse the Law of War, but in addition International Humanitarian Law and International Environmental Law, must be studied in order to comprehend which treaties or provisions may be applicable during warfare. The aim of international law can also be to “*address the link between military activities and environmental protection*”. (Sands and Peel, 2012, p.790) IHL regulates the conduct of armed conflict, while IEL provides the legal framework for the protection of the natural environment. However, as human life cannot exist without the natural environment, IHL also seeks to assure environmental protection, for this reason the two fields of law overlap each other. (ICRC, 2010; Wyatt, 2010, p.596)

In this chapter my attempt is to analyse the intersection of IHL and IEL, and I will try to answer how IHL and IEL operate in times of armed conflicts. In the second part of this chapter the goals and achievements of the following institutions will be discussed: the *United Nations Environment Programme* (UNEP), the *International Committee of the Red Cross* (ICRC), and the *International Law Commission* (ILC).

After the serious damage caused by World War I, the superpowers were obliged to review the means and methods of warfare, and to take further steps in order to prohibit it by international law (see Appendix I.). During the World War II atomic bombs were used for the first time, causing severe threats to human life and to the natural environment as well. The international community decided to make further steps in order to avoid a similar humanitarian catastrophe in the future. For this reason the *Fourth Geneva Convention of 1949* was adopted, the aim of which was to protect civilians. (Wyatt, 2010, p.607) First, the *Biological Weapons Convention* came into force in 1972, more than twenty years later the *Chemical Weapons Convention* in 1993 meaning that the use of use of chemical and biological weapons is forbidden (see Appendix I.). Not only the development and stockpiling, but also the transfer of such weapons was prohibited. (ICRC, n.d.)

According to the ILC the following factors should be analysed during an armed conflict in order to determine if a treaty can be applicable:

- “*The nature of the treaty, in particular its subject matter, its object and purpose, its content and the number of parties to the treaty;*”

- *The characteristics of the armed conflict, such as its territorial extent, its scale and intensity, its duration and, in the case of non-international armed conflict, also the degree of outside involvement*". (Loets, 2012, pp.131–132)

## 2.1. International humanitarian law

International law in general remains reluctant in most of the cases to recognise that the environment needs also specific protection by a legal framework. It is also crucial to mention that IHL does not accommodate a uniform definition of the "*natural environment*", as it refers to a very wide sense including the atmosphere, water, soil, rocks plants and animals. (Calpham and Gaeta, 2014, pp.470–471) The first general rule protecting the natural environment are the *1899 and 1907 Hague Regulations*, which restricts the destruction of enemy property, only with an exception in case of imperative military necessity (see Appendix I.). Article 23 of the Hague Regulations declares:

*"It is forbidden to destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war"*. (ICRC, 1993)

Later, it was rephrased in the *Fourth Geneva Convention of 1949*. (Calpham and Gaeta, 2014, pp.473–474) The international community's concern in the protection of the natural environment during armed conflict grew over the last fifty years. Firstly, the issue became a serious concern during the war in Vietnam, and in consequence the *Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques* (ENMOD Convention) was adopted in 1976 and it entered into force in 1978. (Calpham and Gaeta, 2014, p.470) The United Nations Committee of the Conference on Disarmament adopted the *ENMOD*, providing a legal framework for the use of environmental modification techniques, which may cause damage to the enemy. (Bothe et al., 2010, p.572) According to the Article 2:

*"The term 'environmental modification techniques' refers to any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space"*. (United Nations General Assembly, 1977)

The interpretation of this article can seem ambiguous. Even though the Convention restricts the use of environment as a weapon, the regulation of the environmental impacts of armed

conflict is lacking. The *ENMOD* refers to warfare which is conducted by States, which means that it cannot be applied *during non-international armed conflicts* (NIAC). However, today the majority of conflicts are NIAC, which questions the Convention's credibility. As of June 2015 the *ENMOD* Convention had only 77 State parties; however France, for example, and the majority of the Middle Eastern states did not ratify it. (Wyatt, 2010, p.613) National implementation measures are crucial, for this reason states should enforce the Convention by repressing the use of restricted techniques within its territory. The ICRC claims that "*effective protection of the environment during armed conflict is possible only if participation in the ENMOD Convention and Additional Protocol I. are universal.*" (ICRC Advisory Service, 2003)

Two provisions were added to the Geneva Conventions – *Articles 35* and *55* under the *Protocol I* of June 8 1977 – which also addressed the environmental protection of armed conflicts. (Calpham and Gaeta, 2014, p.470) Additional Protocol I has been ratified by 174 ratified states as of June 2013, but we must highlight that neither US, Israel, Iraq, Iran nor Turkey were part of it. (Wyatt, 2010, p.613) Article 35(3) is related to the environmental protection of warfare and its states:

*"It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment"*  
(Bannelier-Christakis, 2013, pp.135–136)

As we can observe, the article does not specify concrete limits, and it is argued that the threshold remains very vague causing problems in its application. Academics and experts in the field are concerned if the Vietnam War or the 1990-1991 Gulf War has met all the three mentioned elements. It is very much accepted that only nuclear, biological or chemical weapons can overlap the required damage threshold. (Loets, 2012, p.128)

The second phase of the development of environmental protection in times of armed conflict refers to the Gulf War, when the adequacy of the already existing legal framework raised doubts in the international political arena. Iraqi armed forces caused serious damage to oil wells in Kuwait, but the destruction fell below the threshold regarding by *Articles 35(3)* and *55 of AP I* which prohibits only high level damage ("*widespread, long-term and severe damage*"). (Calpham and Gaeta, 2014, p.470)

The third period began in 1994, when the general principles and rules of IHL and their applicability to the natural environmental law were restated and renewed in the ICRC's *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*. Calpham and Gaeta, 2014, p.470) An International Conference for the Protection of War Victims was held in 1993 in Geneva. Two years later the 26th International Conference of the Red Cross and Red Crescent adopted the Guidelines which are a “*summary of the existing applicable international rules which must be known and respected by members of the armed forces.*” (Gasser, 1996) The purpose of the Guidelines is to highlight the importance to the States and to the armed forces about the protection of the natural environment in times of armed conflicts. However, as the Guidelines were formulated by the ICRC, it cannot be seen as “blueprint for a new codification”. (Gasser, 1996)

In 1988 the Rome Statute established the *International Criminal Court (ICC)*. According to the Rome Statute, the environment must be protected during international armed conflict:

*“Destroying or seizing the enemy’s property unless such destruction or seizure be imperatively demanded by the necessities of war amounts to a war crime in both international and non-international armed conflicts”. (Calpham and Gaeta, 2014, pp.472–473)*

According to article 8(2)(b)(iv) of the Rome Statute a war crime is defined as follows:

*“Intentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.” (Bothe et al., 2010, pp.573–574)*

The *ICC* determines war as “*widespread, long-term and severe damage to the natural environment*”, so we must acknowledge that the threshold remains very high. In addition, we should not forget that the *ICC* is “*only a complementary*” court to the national ones. (Bannelier-Christakis, 2013, pp.141–142) However, if the environment is damaged due to armed conflict, ideally it could be the *ICC* to take the role of mediation of the intersection of different fields of public international law. (Wyatt, 2010, p.637)

In the following section I will focus on general rules which aiming to protect the natural environment in times of armed conflict.

### 2.1.1. The prohibition against pillage

The Hague Regulations, GC IV, and Protocol II of 8 June 1977 addition to the Geneva Conventions also includes the prohibition against pillage. The Rome Statute considers pillaging a town or a place as a war crime in both international and non-international armed conflict. According to the UNEP the exploitation of natural resources by conflicting parties is a major cause of many contemporary armed conflicts. (Calpham and Gaeta, 2014, pp.473–474)

### 2.1.2. Protecting civilian objects during hostilities

The general rules are protecting civilian objects during the conduct of hostilities and it also refers to the principles of distinction, proportionality, and precaution. Even though, the protection of civilian objects may seem not related to the natural environment, but in reality in some specific cases the two areas can be correlated. For example, in 1999 during the war in Kosovo, the NATO forces bombed the Pancevo industrial complex and the petroleum refinery, which caused an incidental damage to the natural environment as an estimated 80,000 and 73,000 tons of crude oil, was released into the soil. In 2006, during the war in Lebanon, the Jiyeh power plant located in the south of Beirut was attacked by Israeli, which led to the release of some 12,000 to 15,000 tons of burning oil into the Mediterranean Sea causing severe damage. However, it may be difficult to assess whether the incidental damage caused to the natural environment was proportionate to the military advantage. (Calpham and Gaeta, 2014, pp.474–475)

Rules regarding the protection of objects indispensable to the survival of the civilian population are also related to the protection of the natural environment. Article 54(2) of the AP says it is unlawful:

*“Attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as food-stuffs, agricultural areas for the production of food-stuffs, crops, livestock, drinking water installations and supplies and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive”.* (Calpham and Gaeta, 2014, p.476)

These rules are relevant for the environmental protection, as they defend fundamental elements of the natural environment such as: agricultural areas, drinking water supplies, and livestock. (Calpham and Gaeta, 2014, p.476)

### **2.1.3. The protection of water**

Ameur Zemmali describes water as following: “*water is life-giving and bounteous, the symbol of fertility and purity, is also a source of fear, risk and danger, of covetousness and conflict.*” (Zemmali, 1995) Water may become targets or a mean of warfare in times of armed conflict, but as previously mentioned IHL aim is to protect specific categories of persons and objects. Even though it does not include specific regulation about water, several provisions outlines that “*water is indispensable to the basic needs of protected persons*”. (Zemmali, 1995)

Article 14 of Protocol II, gives examples for indispensable objects “*drinking water installations and supplies and irrigation works.*” The Protocol prohibits attacks against “*works and installations containing dangerous forces*” as it can have dangerous effect on the civilian population. “*Dams, dykes and nuclear electrical generating stations*” (Zemmali, 1995) are considered to be the three categories of works or installations. Moreover, water is a crucial resource for protected wounded and sick people, for this reason it is important to highlight that Provisions of the Third and Fourth Conventions refers to the protection of the “*medical equipment and installations as well as to the hygiene and maintenance of any place where there are protected persons*”. (Zemmali, 1995)

### **2.1.4. Weapons law**

Last but not least, the legal framework for the use of weapons during armed conflicts may also have an impact on the natural environment. The *Hague Regulations* prohibit the use of poison or poisoned weapons, the *Geneva Gas Protocol of 1925* and the *Biological Weapons Convention of 1972* regulates the restriction of biological weapons, while the *Chemical Weapons Convention of 1993* restricts the use of chemical weapons. The use of such weapons can have a devastating effect on humans and animals. Therefore, these regulations are very important in order to protect the natural environment. (Calpham and Gaeta, 2014, p.477)

Even though the ICC “concluded that the use of nuclear weapons would be generally contrary to the principles and rules of IHL”, (ICRC, 2013a) there is no universal agreement on the restriction of nuclear weapons under international law. In 2011, the International Red Cross and Red Crescent Movement urged States that nuclear weapons should be avoided in the future, for this reason the objective is to implement a legally binding international agreement. The paradox of nuclear disarmament and nuclear arms race remains a very complex issue. (ICRC, 2013a)

In the *Nuclear Weapons Advisory Opinion*, the *International Court of Justice* (ICJ) encourages States for the environmental protection:

*“States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality.” (Birnie and Boyle, 2002, pp.149–150)*

Literature claims that Iraq’s attack on oil wells do not meet the “tests of necessity or proportionality which govern military actions in general international law”. Even though the ICJ refuses the employ of weapons which contaminate the environment, however it does not restrict the use of nuclear weapons. (Birnie and Boyle, 2002, pp.149–150)

## **2.2. International environmental law**

### **2.2.1. Multilateral environmental agreements**

It is crucial to analyse international environmental law, as there are numerous treaties which can be applied during an armed conflict. The application of multilateral environmental agreements (MEAs) differs, in some cases they can still be applied, but in other cases the MEAs may be suspended at the outbreak of an armed conflict. (Bothe et al., 2010, p.581) Even though many international agreements do not directly refer to the environment, some of them include “general principles and provisions that may be applied in order to promote environmental protection.” (Kiss and Shelton, 2004, p.736)

The majority of the conventional wars cannot be legally analysed regarding to the environmental provisions of law of armed conflict. The important question arises, can



international environmental law be applied in cases of environmental damage caused by armed conflict. Articles 192 and 194.1 of the *Law of the Sea Convention (LOSC)*, declares that the States are obliged to:

*“Protect and preserve the marine environment and to take all necessary measures to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practical means at their disposal”.* (Loets, 2012, p.129)

During armed conflicts, cultural objects were often damaged, especially due to bombardments. During the last century, the international community agreed several times to provide regulations for cultural properties in times of warfare. The following international protocols and conventions, refer to the protection of cultural properties during periods of armed conflict: the 1899 and 1907 Hague Conventions, the 1964 Hague Conventions for the Protection of Cultural Property in the Event of Armed Conflict, the 1977 Protocol I additional to the 1949 Geneva Conventions, and the 1999 Second Protocol to the 1954 Hague Convention. The mentioned regulations find *“illegitimate to intentionally damage or destroy cultural property during periods of armed conflict, unless the enemy is currently utilising that property for military purposes and/ or the principle of military necessity is invoked”*. However, as violence and armed conflict seem to be a central issue, cultural objects can be used for military purposes, they will remain to be vulnerable damage. (Hensel, 2005, pp.82–84)

The purpose of the *1972 World Heritage Convention (WHC)* is to protect habitats which are nominated as natural heritage sites from the environmental damage caused by armed conflict. Article 4 and 5, states that States must protect such sites. (Loets, 2012, p.129)

The *Ramsar Convention* or in other term the Convention on Wetlands was signed in 1971 and it entered into force in 1975 and it proved a List of Wetlands of International Importance. Today it has 169 Contracting Parties and it accounts 2,241 sites. (Ramsar Convention, n.d.) According to the Convention, the states have the right *“to delete or restrict the boundaries of wetlands already included by it on the List, because of its urgent national interests”*. (UNESCO, 1971) Warfare may also have a negative impact on the marine environment, therefore it is crucial to provide a legal framework for its protection. The *UN Convention on the Law of the Sea (UNCLOS)* urges the member states *“to protect and preserve the marine environment, as well as to take measures to prevent, reduce, and control marine pollution.”*

(Bothe et al., 2010, p.582) The *1997 Watercourses Convention* refers to armed conflicts as well and its Article 29 states that:

*“International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.” (Sands and Peel, 2012, pp.791–792)*

There are several MEAs which remain silent on the issue regarding the environmental protection of armed conflicts, and they do not provide a reference: *Convention on Biological Diversity* (1992), the *UN Convention to Combat Desertification* (1994), and the *Convention on the Conservation of Migratory Species of Wild Animals* (1979). (Bothe et al., 2010, p.583)

### 2.2.2. Soft law instruments

The Declaration of the United Nations Conference on the Human Environment in other words the *Stockholm Declaration* was adopted in 1972. According to Principle 21:

*“States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction”.* (Bothe et al., 2010, p.584)

Principle 24 of the 1972 Stockholm Declaration provides:

*“Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.”* (Sands and Peel, 2012, pp.790–791)

Twenty years later, in 1992, the Declaration on Environment and Development also named *Rio Declaration* was adopted. Principle 24 stated:

*“Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary”.* (Bothe et al., 2010, p.584)

However, it does not specify which law this is, for this reason it can be claimed that the Rio Declaration is “ambiguous”. (Loets, 2012, p.127; Sands and Peel, 2012, p.791) The *Programme of Action for Sustainable Development* (Agenda 21) was adopted at the Rio Conference and its Article 39(6) declares:

*“Measures in accordance with international law should be considered to address, in times of armed conflict, large-scale destruction of the environment that cannot be justified under international law”. (Bothe et al., 2010, pp.584–585)*

The mentioned article also clarifies that the UN General Assembly and Sixth Committee are responsible to address these issues with the help of ICRC. (Bothe et al., 2010, pp.584–585)

There are two provisions within the *1982 World Charter for Nature* which refers to military operations.

*(5) „Nature shall be secured against degradation caused by warfare or other hostile activities”.*

*(20). „Military activities damaging to nature shall be avoided”. (Szasz, 1996, p.279; Sands and Peel, 2012, p.791)*

On the one hand, these principles refer to the prohibition of the environmental damage of armed conflicts. On the other hand, these principles are more likely just to be a political voice than a legal basis. (Bothe et al., 2010, pp.584–585)

### **2.2.3. Responses to environmental damage**

Regarding dispute settlement in the field of International Environmental Law there are different procedures. In some cases the ICJ assess the environmental disputes, while in others the International Tribunal for the Law of the Sea (ITLOS) or the Human Rights Courts might do it. (Boschiero et al., 2013, p.383) During the last couple of years the ICJ received a large number of cases related to the environment. However, the ICJ urges states, that the protection of the environment should be mainly resolved on a national level. (Boschiero et al., 2013, p.399) Till today, the ICJ is still avoiding the identification of “new emerging principles of international environmental law”, and therefore the Court is criticised by academia as it does not contribute to the development of IEL. (Boschiero et al., 2013, p.400)

IEL is still in a process of evolution, it transformed and developed in a number of aspects; however it still cannot impose criminal liability. Indeed, on a national level, several domestic environmental laws include criminal responsibility. (Wyatt, 2010, p.616) In consequence, the question arises: how are the treaties within the IHL implemented?

The international responsibility of states is crucial in the protection of the environment in times of armed conflict. The four Geneva Conventions and also the Protocol I urge that states are “*under an obligation to respect and to ensure respect of international protection of the environment*” and they are responsible for “*cessation of the unlawful conduct, restitution and reparation*”. (ICRC, 1993) On the other hand individual criminal responsibility must be also analysed too. The Regulations annexed to the Hague Convention IV of 1907 and the provisions of the Geneva Conventions refer to the individual criminal responsibility regarding the contamination of the environment in situation of warfare. Overall, the international law urges states to prosecute such crimes. In addition, it is important to spread knowledge and information about IHL, for example, signatories of the Geneva Conventions or to their Additional Protocols is responsible to spread the summary of these treaties. (ICRC, 1993)

Ad hoc international tribunals were established in order to try crimes which were carried out in the wars in the former Yugoslavia and in Rwanda. At both tribunals the legal framework exists in regards the prosecution of crimes on the environment. However, we have to realise that international tribunals have “*so far failed to adequately address the problems of individual criminal responsibility for wanton destruction and damage to the environment*”. (Marauhn, 2000)

#### **2.2.4. The role of international organisations**

The ICRC is “*neutral and independent humanitarian institution and their main mission of which is to provide assistance and protection to the victims of armed conflict*”. (ICRC, 2010)

The new provisions of the 1977 Protocol I urge civil defence organisations to contribute to the “*repair of indispensable public utilities*”. (ICRC, 2010) The destruction of water supplies and water resources can have serious impacts on people’s health, for this reason the ICRC highlights the importance of water as it “*should not become a weapon used against civilians*”. (ICRC, 2010) The organisation has an important role in increasing awareness to ensure efficient protection of water supply systems, and its role is to contribute to remedial

and preventive actions. It is important to highlight that the ICRC provided a supply of crucial elements such as water, food and medicines to the many foreigners who fled Iraq and Kuwait during the war. In Iraq a special program was implemented to restore and provide water supplies for the civilians and for the public services. Power plants can be destroyed in times of armed conflicts, causing serious threats to water supplies, and diseases can outbreak, for this reason the ICRC's aim is to "*preserve or guarantee the minimum conditions of health and hygiene*" for the civilian population. Due to their programme "*cholera, typhus and other epidemics threatening the population were successfully averted*" in Iraq. (Zemmali, 1995)

In addition, it is networking in order to develop a deeper cooperation with the National Red Cross and Red Crescent Societies and their Federation, UN agencies and also with NGOs and the private sector. The ICRC's on the environmental protection of warfare is appreciated and recognised on an international level. (Zemmali, 1995) The ICRC submitted a report about the protection of the environment in time of armed conflict to the United Nations General Assembly in the year 1993. The report examines the existing law which regulates the field of environmental protection in situations of armed conflict. (ICRC, 1993)

The UNEP is considered to be the "*vehicle for coordinating the goals of global environmental assessment and environmental management*". (Joyner, 1998, p.292) The United Nations Conference on the Human Environment was held in Stockholm in 1972, where the Action Plan was adopted, providing a structure of objectives, including environmental assessment, environmental management, and supporting measures. (Joyner, 1998, p.292) The UNEP proved to be a relevant actor in developing cost-benefit analysis regarding the environmental protection. (Joyner, 1998, p.293) The General Assembly adopted a resolution in November 2001, in order to highlight the importance of the environmental protection in times of armed conflict (see Appendix III.) (UN General Assembly Resolution, 2001)

The *International Law Commission* (ILC) was created by the UN General Assembly. The main objective of it is "*the promotion of the progressive development of international law and its codification*". (UN Audiovisual Library, 1947) The ILC consists of thirty-four-members and it sets up annual sessions at the United Nations Office in Geneva. The ILC has an important role in the field of international environmental law, therefore it is crucial to mention the 1976 Draft Articles on State Responsibility, which is related. The article emphasises the importance of protecting the environment. (Joyner, 1998, pp.300–301)

The ILC's *Draft Articles on the effects of Armed conflict on treaties* was adopted at the 66th session of the United Nations General Assembly's Legal Committee in November 2011. Even though the Draft Articles are legally no binding, the document has an important value as it suggests the applicability of environmental treaties in times of armed conflict. Some are convinced that it will develop norms and the legal framework, helping to improve environmental conditions. It is important to highlight that the Draft Articles apply to international treaties, also, Article 2(b) clarifies, that international and non-international armed conflict are included. (Loets, 2012, p.131)

In 2013, at the sixty-fifth session, the International Law Commission determined to add the issue of the "*Protection of the environment in relation to armed conflicts*" into their work and Marie Jacobsson was appointed by the Commission as a Special Rapporteur. In a long-term the ILC may provide further clarification for the legal protection of the environment during armed conflict. (Calpham and Gaeta, 2014, pp.489–490) Marie Jacobsson's aim is to raise awareness and she stated that "even if states do not find themselves obliged to regulate their military activities during armed conflict, most states today have environmental regulations in their rules of engagement and it was not the case 10 years ago." (Mathiesen, 2014)

## **Conclusion**

Overall, we can observe in Chapter 2, that different declarations and conventions were adopted in the field of IHL and IEL by the members of the international community during the past century with the objective of ensuring the protection of the environment in times of armed conflict. It can be claimed that warfare will not be eliminated from societies in the near future, thus, it is indeed, more than crucial, to put a big emphasis on the environmental protection in times of armed conflicts. Therefore, it is important to put more effort in order to achieve universal acceptance of the key conventions.

## **CHAPTER 3 – Case studies**

Finally, in Chapter 3, I will attempt to analyse the environmental impacts of the 1990-1991 Gulf War, the 2006 Israel-Lebanon conflict and the current Syrian crisis. In my opinion, it is crucial to conduct a research about the mentioned armed conflicts, as all of them had seriously

damaged the natural environment. Therefore, in each section, first I will look at the environmental consequences, and then I will provide the relevant legal framework. Last but not least, the international community's responses will be also studied.

### 3.1. The First Gulf War

The Iran-Iraq War started in 1980, when Iraq invaded Iran and it was fought for territory till 1988 (see Appendix I.). (Weller, 2010, p.264) From scope of international law, the Gulf War began on August 2, 1990, when Iraqi forces entered Kuwait, as it can be considered as a violation of international law. However, the US argues that the war started on January 16, 1991 with the bombing campaign. (Kahn, 1993, p.427) The war had severe environmental impacts; however, even before the war broke out, on 23 September 1990, Saddam Hussein already threatened Kuwait by setting fire the oilfields. (Roberts, 1996, p.243) In 1990 the Resolution 678 enabled the use of force in order to liberate Kuwait. (Weller, 2010, p.266)

The Operation Desert Storm started on 17 January 1991, by the US-led coalition, including 26 nations and 600,000 troops. The coalition targeted mainly "*Iraqi military forces and infrastructure, including nuclear, biological and chemical weapons facilities, as well as numerous other sites including oil refineries, electrical power stations, and petrochemical facilities.*" (Jha, 2014, pp.62–65) Finally the ceasefire was declared on 28 February 1991, later the UN Security Council adopted resolution 687 regarding about it on 3 April 1991. (Jha, 2014, pp.62–65)

During the Gulf War, more than 10 million m<sup>3</sup> of oil and heavy metals were spread into the ocean. It is important to mention, that it was made intentionally and it lead to bird mortalities and to the damage of habitats. (Lawrence, 2015) The environmental consequences can be described as follows: "*ecological effects of oil spills in the Persian Gulf are magnified by the fact that it takes five years to flush contaminated water through the narrow Strait of Hormuz into the Arabian Sea.*" (Bender, 2003) In addition, at least 400 kilometres of Saudi Arabia's coastlines were seriously threatened. (Roberts, 1996, p.248) The 1991 Gulf War is reportedly the first conflict in which *depleted uranium* (DU) ammunition was used on a military scale. Overall, 50 tons of DU were fired during tank battles and 250 tones used in air to ground attacks. (Jha, 2014, pp.62–69) Mac Skelton, a researcher for the Costs of War project at Brown University wrote his doctoral thesis on the correlation of environmental consequences

and health problem regarding the Gulf War. The US and UK forces used shells, which poisoned the soil and the water in Iraq. Researchers have suggested that the radiation of the depleted uranium weapons has led to the increase of cancer; however, the UK government does not share such accusation. Overall, no clear research can show or disprove the relation between cancer and depleted uranium weapons. (Mathiesen, 2014) Skelton also claims that *“the environment goes out the window, even outside of war”*. (UNEP, 2003, p.63) He believes that the most negative environmental impact on Iraq was the automatic damage of the country’s infrastructure, as it *“destroyed the apparatus of society”*. (UNEP, 2003, p.63) During the invasion, 190.8m litres of oil were used on a monthly basis by tanks and Bradley fighting vehicles. In general, during armed conflicts there is a big need to displace people and arms, for this reason the maintenance of infrastructure consumes a lot of fuel. (Mathiesen, 2014) In addition, the United Nations Special Commission (UNSCOM) came to the conclusion that *“chemical weapons were released as a result of coalition bombing”*. (UNEP, 2003, p.63)

Industrial facilities were also targeted, such as chlorine, phosphorus and vaccine plants were damaged. The attack of chemical and industrial plants had a serious impact on the environment, as different toxic chemicals contaminated the atmosphere, soil and water resources. (UNEP, 2003, p.65) Due to the armed conflict a big amount of hazardous waste occurred in the attacked areas of industrial and military facilities. (UNEP, 2003, p.69)

According to estimates around 70 % of the conventional bombs employed by the US in the territories of Iraq missed their target. According to estimates around 17,700 tons, which had never exploded, caused serious threats to civilians and to the nature. It is important to highlight that the Coalition forces destroyed around 3,000 tanks and 2,100 artillery pieces in Iraq. (Jha, 2014, pp.191–193) In consequence, Iraq faced numerous environmental problems such as ecosystem degradation, desertification, deforestation, and loss of biodiversity. The following were an even bigger threat as prior to the war: water resource and waste management and oil industry. (UNEP, 2003, p.28)

### **3.1.1. Environmental damage in Kuwait**

Due to the Iraqi invasion 800 out of 900 Kuwaiti wells were demolished and *“the fires consumed over 6 million barrels of crude oil and 70 million cubic metres of associated gas*



*daily.*” (Jha, 2014, pp.62–69) Huge amount of hydrocarbons was released as a result of the oil-well fires, which had a negative impact on the environment. In consequence of the smoke the average temperatures decreased by 10°C in different parts of Kuwait and Iraq. Even in Bahrain, 400 km from the oil-well fires the average temperature was 7.5° less in May 1991 than usual at the same time of year. Overall, the local and regional environmental impacts were serious. The Persian Gulf is full of different ecosystems. The vegetation was threatened by the oil causing a decrease in photosynthesis. Birds were very much affected by the consequences of the oil spill. Furthermore, during the war, around 8000 camels died. In many countries smoke clouds were present, especially in Iraq, Iran, Qatar, Pakistan, Turkey, Sri Lanka, India, and in Bulgaria and black snow was found about 2600 km from Kuwait, in India. (Jha, 2014, pp.62–69)

According to estimates 3 x 10<sup>8</sup> tons of carbon dioxide occurred from the oil fires, which is around “1.5% of worldwide annual emission from fossil fuels and biomass burning.” (UNEP, 2003, p.67) Salt water was used in many cases in order to stop the fires, which caused the salinization of the soil followed by killing some species of the fauna. Statistics provided that the environmental damage which occurred in Kuwait cost at least US\$40 billion. (UNEP, 2003, p.68)

### 3.1.2. Responses

Different national and international organisations provided environmental recommendations and assistance aftermath the war. The Saudi Meteorology and Environmental Protection Administration and the *International Maritime Organisation* (IMO), the UNEP and the *Regional Organisation for the Protection of the Marine Environment* (ROPME) achieved big efforts in oil cleaning up and recovery. (Roberts, 1996, p.254) The UNEP also conducted several researches on the environmental impacts of the war in order to provide environmental reconstruction. (UNEP, 2003, p.9)

Even though no declaration was established after the Gulf War cease-fire, the Security Council urged Iraq for the followings:

*“Provide all information and assistance in identifying Iraqi mines, booby traps and other explosives as well as any chemical and biological weapons and material in Kuwait, in areas of Iraq where forces of Member States cooperating with Kuwait pursuant to*

*Resolution 678 (1990) are present temporarily, and in adjacent waters.”*  
 (Szasz, 1996, p.284)

After the war, the UN decided to introduce sanctions against Iraq and made the country pay compensations for the damages. (Jha, 2014, pp.71–72) *“The destruction was one basis for the reparations demanded by the UN Security Council from March 1991 onwards.”* (Roberts, 1994, p.168) The United Nations Compensation Commission (UNCC) was established on May 20, 1991, due to the Security Council’s Resolution 692 in order to “process claims and pay compensation for losses resulting from Iraq’s invasion and occupation of Kuwait”. (Lee, 2007, p.626) Several panels were created with the objective to examine the claims and propose compensation in case if it is needed. The role of the UNCC was to create different categories according to the claims, therefore groups “A”, “B”, “C”, “D”, “E” and “F” were established. (Giorgetti, 2013, p.530) The governments of the following six states: Iran, Jordan, Kuwait, Saudi Arabia, Syria, Turkey requested 107 claims, many of which were related to the environmental damage. (Lee, 2007, p.627)

In the year 1998, the Governing Council of the UNCC nominated the “F4 Panel of Commissioners” to survey the claims and losses. The Table below summarises the claims required by the countries, and it is expressed in US dollars. As we can see, the total compensation accounted 1,007,412,574 USD. (Lee, 2007, p.635) As the process was ongoing, the Panel finally suggested the following amounts to the first instalment of “F4” claims; the amounts can be seen below. (Lee, 2007, p.668)

Country	Total number of claims	Amount claimed (USD)	Amount recommended (USD)
Iran	40	42,951,383	17,007,070
Jordan	10	12,488,949	7,060,625
Kuwait	22	460,421,114	108,908,412
Saudi Arabia	24	482,156,943	109,584,660
Syria	10	5,623,885	674,200
Turkey	1	3,770,300	nil
Total	107	1,007,412,574	243,234,967

**Table 1:** Summary of recommended awards for monitoring and assessment claims (Lee, 2007, p.668)

The operations slowed down in 2003 as it was coming to an end, but finally the process was concluded in 2005. By 2007, the individuals were awarded by the Commission. It is important to highlight, that in fourteen years – since the establishment in 1991 till the conclusion of the

process – the Commission “*had processed approximately 2.645 million claims seeking approximately US \$352.5 billion compensation for death, injury, loss of or damage to property, commercial claims, and claims for environmental damage*”. Overall, the UNCC is a particular episode of the UN’s history as a “post-conflict claims resolution mechanism”. (Giorgetti, 2013, p.515)

In addition, it is important to mention, that in June 2001 the UNCC awarded US\$243 million to Iran, Jordan, Kuwait, Saudi Arabia and Syria in order to conduct researches on the environmental impacts of the Gulf War. During the past few years “*many people have referred to the UNCC experience as a potential model for environmental claims settlements*”, (UNEP, 2003, pp.56–57) as it is considered to be the biggest recompensation in the history of international environmental law. (Sand, 2011, p.430)

### **3.1.3. Legal framework**

During the Gulf War, several international bodies such as the UN and the ICRC gave recommendations regarding the application of the international laws. (Roberts, 1994, p.143) Overall, in the military activities which twenty-eight countries took part; however forty-two countries provided contributions to the Coalition. Fourteen principal states which were involved in the conflict are the following: Canada, Egypt, France, Iran, Iraq, Israel, Italy, and Jordan, Kuwait, Saudi Arabia, Syria, Turkey, UK, and US. The following agreements were in force during the Gulf War:

- *1899 and 1907 Hague Conventions*: Even though not all involved states were part of the convention, they are generally accepted as part of international customary law.
- *1925 Geneva Protocol on Gas and Bacteriological Warfare*: The mentioned fourteen states are members of the international agreement, which restrict the use of gas, chemical and bacteriological weapons in times of war.
- *The four 1949 Geneva Conventions on Protection of Victims of War*: The fourteen states listed above are members of the Conventions. (Roberts, 1996, p.240)

	Can	Egy	Fra	Iran	Iraq	Isr	Ital	Jor	Kuw	Sau	Syr	Turk	UK	US
1907 Hague Convention IV & Annexed Regs. on Land Warfare <sup>1</sup>			p	s			s					s	p	p
1925 Geneva Protocol on Gas & Bacteriological Warfare <sup>2</sup>	p	p	p	p	p	p	p	p	p	p	p	p	p	p
1948 Genocide Convention <sup>3</sup>	p	p	p	p	p	p	p	p		p	p	p	p	p
1949 Geneva Conventions on Protection of Victims of War <sup>4</sup>	p	p	p	p	p	p	p	p	p	p	p	p	p	p
1954 Hague Cultural Property Convention and Protocol <sup>5</sup>		p	p	p	p	p	p	p	p	p	p	p	s	s
1977 Convention on Environmental Modification Techniques <sup>6</sup>	p	p		s	s		p		p		s	s	p	p
1977 Geneva Protocol I on International Armed Conflicts <sup>7</sup>	p	s		s			p	p	p	p	p		s	s
1981 UN Convention on Specific Conventional Weapons <sup>8</sup>	s	s	p				s					s	s	s

p = "Party," that is, through signature followed by ratification, or through accession  
s = "Signatory," that is, country had signed but not yet ratified, and thus is not a formal party to the treaty

**Table 2:** Main Laws-of-War Treaties –

Participation of 14 States Involved in the Gulf Crisis of 1990-91. (Roberts, 1994, p.138)

Several international agreements refer to the Gulf War, but not all of them were legally forced. As mentioned before, the ENMOD Convention restricts the “*manipulation of the processes of nature for military purposes*”, for this reason the Convention can be referred to the oil spelling, which affected both the sea and land causing huge fires. (Sands et al., 1991, p.216) However, the *ENMOD* was not fully in force during the Gulf War, as only six countries – Canada, Egypt, Italy, Kuwait, UK, US– out of the fourteen mentioned earlier were parties. Iran, Iraq, Syria and Turkey already signed the treaty by the Gulf War, but did not ratify it. The other states such as France, Israel, Jordan and Saudi Arabia did not even sign the ENMOD Convention. Moreover, the *1977 Additional Protocol I* was not ratified by all the states which were involved in the conflict, causing problems in its applicability. Only Canada, Italy, Jordan, Kuwait, Saudi Arabia and Syria were formally signatories of the API. In addition, the *1981 UN Convention of Specific Conventional Weapons* was only ratified by France, for this reason the Convention was not accepted to be forced. The *Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property* was formally applicable during the Gulf War, as Iraq and Kuwait were ratified parts of it, which meant that it was applicable regarding the occupation of Kuwait by Iraq. (Roberts, 1996, p.241)

### 3.2. Lebanon

Lebanon, or officially the Lebanese Republic is found on the eastern shore of the Mediterranean Sea. On the north and east of Lebanon, Syria while by the south Israel is located (see Appendix II). Lebanon gained its independence from France on 22 November 1943, and it *“became a model of social and economic development in the Middle East, with impressive growth, high investment, and unmatched socioeconomic indicators.”* (Darwish, Farajalla and Masri, 2009, p.630) From 1975 till the beginning of the 1990s Lebanon faced a number of armed conflicts which had a negative impact on the country’s economy and environment. (Darwish, Farajalla and Masri, 2009, p.630)

The 2006 Lebanon war started with the Hezbollah attacks and by their launch of rockets toward Israel’s territory. Two Israeli patrols were attacked, and in response, Israel employed artillery and airstrikes in the southern Lebanon. In the aftermath the UN Security Council tried to reach a consensus, but the member states did not agree. Finally, former Secretary General Kofi Annan urged for a ceasefire, which was supported by Lebanon and by several Arab states. The UNSC passed the resolution 1701 on 11 August 2006, which called Israel for the withdrawing from Lebanon while Hezbollah had to stop the rocket attacks. (Shevtsov, 2007)

It is important to mention that the 2006 Lebanon war is not considered to be a traditional conflict as it occurred between Israel, a state, and Hezbollah – which is a *“political Islamist group with military and civilian arm”*. Even though Hezbollah *“has representatives in the Lebanon’s Parliament and is politically involved in the country, its actions were not state-sponsored and cannot be attributed to Lebanon as a nation-state.”* (Shevtsov, 2007)

The armed conflict between Israel and Lebanon (or, in other words, the July War) started on the 12th of July 2006. The cease fire was implemented on the 14th of August 2006; however, in reality, the Israeli ended the naval blockade only on the 8th of September. The war had an enormous negative impact on Lebanon infrastructure and many sectors such as industry, tourism and agriculture faced a big damage. Around one million people were obliged to leave their homes, but the Lebanese government claimed that 700,000 of the displaced people had returned to their homes by the end of August 2006. (Darwish, Farajalla and Masri, 2009, p.629)

The Heinrich Böll Foundation claimed that *“Lebanon has a poor record when it comes to environmental issues and the divided nature of Lebanese politics means that the environment is not policy priority.”* (Heinrich Böll Foundation, 2006, p.7) The Lebanese Minister of Environment officially demanded UNEP take in charge a post-conflict environmental assessment of Lebanon. (UNEP, 2007, p.6) The UNEP carried out an impressive work, the team of twelve international environmental experts visited more than 100 sites between 30 September and 21 October 2006, and meanwhile *“200 samples of soil, surface and groundwater, dust, ash, seawater, sediment and marine animals”* was taken. After the ceasefire, a *Joint UNEP/OCHA Environment Unit* was established in Beirut in order to coordinate the environmental assistance to the oil spill. Oil Spill Operations and a Coordination Centre were implemented by the Joint Unit with the Ministry of Environment and EU in order to coordinate the budgetary issues. (UNEP, 2007, pp.10–11)

### **3.2.1. Industrial and urban contamination**

The war has led to the contamination of agricultural, commercial and infrastructure damage. The attack of Jiyeh power plant and the fuel storage tanks at Beirut airport contaminated the soil with hydrocarbon. Many industrial facilities were also attacked, while pollutants were released. The bombings of the Choueifat industrial area and the Ghabris factory located in Tyre, caused the release of chemicals into the soil and water sources. (UNEP, 2007, p.163) Even though the time of the armed conflict was relatively short, the impact on Lebanon’s environment was significant. The infrastructure was heavily damaged: *“with 130,000 dwelling units destroyed; 900 factories and commercial buildings shattered; 107 bridges and overpasses, approximately 445,000 m<sup>2</sup> of road network and 27 fuel stations bombed.”* (Jha, 2014, p.93) It is important to highlight that 565 sections of road was also damaged, causing problems in the transport. (Darwish, Farajalla and Masri, 2009, p.633) Overall, property and infrastructure were very much damaged, and it is estimated it caused US \$ 3.6 billion. (Heinrich Böll Foundation, 2006, p.1) Targeting fuel tanks lead to big fires, the attacks at Beirut airport, industries and petrol stations led to the hydrocarbon contamination of the lands. It is claimed that *“the smoke from the fires released a number of pollutants into the atmosphere, including soot, particulate matter, carbon monoxide, and methane.”* (Shevtsov, 2007)

Before the outbreak of the war in Lebanon around 30-40% of the population worked in agriculture. (Darwish, Farajalla and Masri, 2009, p.632) The government estimated that around 85% of Lebanon's 19,500 farmers harvest were seriously damaged, causing a damage of \$135 and \$185 million. In addition, many fruits and vegetables were left on the fields of Bekka valley and in the South, as it was risky to conclude the harvest. (Heinrich Böll Foundation, 2006, p.6)

The armed conflict had a serious impact on the waste management system, as the municipal services faced many problems. Due to Jiyeh power plant's oil spills a few thousand cubic metres of waste materials was contaminated risking the clean-up operations. In addition, a huge amount of hazardous healthcare waste disposed in the consequence of injuries, threatening the locals and the environment. (UNEP, 2007, p.104)

### **3.2.2. Water resources**

In the Middle East, Lebanon considered to be a country with a high water per capita ratios, and it is claimed that freshwater is one of country's most important natural resource. The 2006 armed conflict highly destroyed Lebanon's water infrastructure, posing problems to the distribution and management of water supplies. In addition, there was a high risk of the drinking water supplies and sanitation services pollution. (UNEP, 2007, p.112) It is also important to highlight that a number of industrial facilities were attacked, thus, risking the surface and groundwater contamination. However, the contamination of water remained relatively low, as the attacks occurred mainly against residential and civil infrastructure, which does not include a high level of chemicals. In addition, many industries did not operate and they cleared the storage tanks during the armed conflict in order to avoid severe pollution. (UNEP, 2007, p.117) The attacks destroyed wastewater and freshwater canals leading to the contamination of waters, especially in rural areas. (Fattah, 2006) Beirut, Bint Jbeil, El-Khiam, Nabatiyeh and the many other villages in the South faced serious water contamination issues due to the attacks. (UNEP, 2007, p.129)

### 3.2.3. Coastal and marine environment

The Israeli airstrike's attacked the fuel tanks at the Jiyeh power station, which is located thirty kilometres south of Beirut on July 13 and 15. The attacks led to the release of 10,000-15,000 tons of fuel oil into the Mediterranean Sea. As the armed conflict was still going on, the clean-up could not start before the ceasefire. During those five weeks, the oil polluted 150 kilometres out of 225 kilometre coastline. The event affected not only the involved countries, but also the coastlines of Syria, Turkey and Cyprus. (Heinrich Böll Foundation, 2006, p.1) The sunken oil was "*likely smothering the biota in the sediment.*" (UNEP, 2007, p.166) Due to the wind conditions, a big part of the oil did not sink, but it negatively impacted "*marinas, wharfs, beaches, property and archeologically important sites, including Byblos.*" (UNEP, 2007, p.166) Concentrations of polycyclic aromatic hydrocarbons (PAH) were found in seabed sediment, and petroleum hydrocarbons were identified in the tissue of oysters and fishes. (UNEP, 2007, p.166)

Wael Hmaidan, a coordinator of the Lebanese environmental NGO Green Line argued that "*all these impurities and chemicals will go into the marine life, into the food chain and they will continue to build up for years and years*". (Heinrich Böll Foundation, 2006, p.2) His aim was to raise awareness about the negative impacts of the war and he described it that: "*it's going to affect seafood restaurants, fishermen, fisheries and tourism. It's going to be hard and tough few years in terms of marine environment*". (Heinrich Böll Foundation, 2006, p.2) Different maritime species –such as Blue Fin Tuna, Loggerhead Turtle and Monk – faced serious impacts due to the oil spill. Tripoli's Palm Islands Nature Reserve, which is located in the eastern Mediterranean was also very much damaged by oil. (Heinrich Böll Foundation, 2006, p.3)

### 3.2.4. Weapons

According to the Israeli military "*the war has badly polluted the air, sea and land. During the conflict, Israel's air force carried out approximately 7,000 aerial attacks throughout Lebanon while its navy conducted more than 2,500 bombardments of the Lebanese coast.*" (Arab NGO Network, n.d.) The *Israeli Defence Forces* (IDF) employed different ammunitions from aircrafts, tanks and stationary positions which caused direct and indirect environmental damage. (UNEP, 2007, p.146) The following weapons and ammunitions were used during



July and August 2006: aerial bombs, aerial-delivered missiles, ground-launched artillery, naval-launched artillery, ground-to-ground combat systems. (UNEP, 2007, p.148)

The *unexploded ordinance* (UXO), such as artillery, shells, cluster bombs, landmines, or rockets caused serious problems to the environment and to the agriculture, limiting the access to around 545 cultivated fields. According to the UN 1 million unexploded cluster bombs occurred during the war, which risked the civilian's life as well. (Heinrich Böll Foundation, 2006, p.4) Some argued that depleted uranium was used during the conflict; however the UNEP came to a conclusion after visiting many sites and conducting analyses, that neither DU, nor, enriched uranium was employed. The UNEP confirmed "*the use of white phosphorus-containing artillery and mortar ammunition was officially recognised by the Israeli Defence Forces (IDF) on 21 October 2006.*" (UNEP, 2007, p.158)

### 3.3. Syria

Syria is situated on the eastern coast of the Mediterranean Sea, and it is bordered by Turkey on the North, by Jordan and Palestine on the South, by Iraq in the East, by Lebanon in the West. It is important to highlight that the country has 210 km coastal parts of the Mediterranean Sea, which has a geopolitical importance today (see Appendix II.). (Syrian Arab Republic..., 2012, p.5) Even before the outbreak of war the country faced severe environmental challenges such as water pollution and scarcity, air pollution, soil degradation and inappropriate solid waste treatment and disposal. (PAX, 2015, p.18) According to a 1999 UNEP report, Syria's "*surface and ground water resources are almost completely exploited.*" (Mahayri, 1999, pp.224–225)

A report was written by the Delegation of the EU to Syria about the county's environmental profile in 2009. Even before the civil war started, Syria faced '*serious natural and man-made environmental problems*'. The problems which caused the biggest threat to the local population and to the environment are the followings: "*water scarcity and contamination, soil degradation, air pollution, inappropriate solid waste treatment and disposal, biodiversity loss and coastal and maritime pollution.*" (Delegation of the European Union, 2009, p.5) Such environmental concerns have a negative impact on both the civilians' health and on their economic productivity. The World Bank concluded that the environmental degradation costs,

which amounted the 2.3% of the country's GDP. (Delegation of the European Union, 2009, p.5)

It is important to highlight that Syria has signed three international treaties which were the outcomes of the Earth Summit on Environment and Development in 1992: the *United Nations Framework Convention on Climate Change*, the *Convention on Biodiversity*, and the *United Nations Convention to Combat Desertification*. In addition, Syria has also ratified the following agreements:

- The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, 1978.
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989.
- The Convention on Wetlands of International Importance, 1997.
- The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998.
- The Convention for the Protection of the Marine Environment of the Mediterranean and the Coastal Region and all its Protocols, 2005.
- The Stockholm Convention on Persistent Organic Pollutant, 2001. (Syrian Arab Republic..., 2012, p.12)

### 3.3.1. Environmental impact

The “Arab Spring” and the protests started in March 2011 in Syria, which turned into a civil war and since then over six million Syrians were displaced in the country, and over three million have fled Syria. The Syrian President Bashar al-Assad with the government security forces and the national Syrian Arab Army (SAA) responded with brutal force causing a high toll of death and humanitarian catastrophe. In addition the use of explosive weapons had a big damage on the environment as well. (PAX, 2015, p.11) The lack of binding legislation is a serious problem when it comes to the environmental protection during the civil war in Syria. (Mahayri, 1999, p.228) As the civil war is still continuing it is very hard to do precise research on the ground, it is difficult to conclude the environmental impacts of the war. However, a number of data are already available. (PAX, 2015, p.14)

### 3.3.2. Industrial facilities and residential areas

In case if an oil refinery is attacked there is a high risk that it causes air pollution due to fires, and it leads to the contamination of soil, surface water and groundwater. Homs and Baniyas are the two cities with the country's essential oil refineries; Homs was attacked several times in 2012 and 2013. Oil pipelines were also attacked leading to the creation of black smoke, for example the US led coalition has also attacked several oil installations in Syria, which are controlled by ISIS. (PAX, 2015, pp.23–25)

Syria has four main industrial zones in the following places: Adra, al-Sheikh Najjar, Hasya and Deir Ez-zor. Homs, Hama, Damascus and Aleppo were directly attacked and destroyed, and as the infrastructures were destroyed and with the combination of the lack of security measures several factories were shut down. Many silk industries were obliged to move to neighbouring countries, while the majority part of the pharmaceutical sector has been severely damaged. (PAX, 2015, p.27)

The regime and rebel forces also attacked water supply systems, including dams, water piper and waste treatment plants. Drinking water projects were destroyed in al-Khaldiyyeh village and in Ariqa-Dama. In May 2010, in Aleppo the water pumping station and the sewage system were destroyed, causing water shortages and the contamination of drinking water risking the local's health. Electricity supplies and waste management services were also attacked. The destruction of power plants leads to loss of power damaging the water distribution and sanitation system. In 2014 Aleppo faced a total shut down of running water, increasing the risk of epidemics and water pollution. (PAX, 2015, p.29)

Even before the war outbreak the system of waste management caused serious problems in Syria. However, the last four years due to a number of attacks lead to an increase of uncontrolled dumping and burning causing negative impact on the ecosystem. (PAX, 2015, p.62) Aleppo, Homs, Hama and the surroundings of Damascus faces a destruction of waste management services, meanwhile several municipalities decided to burn the waste, and as a result the ICRC highlighted that such measures may lead to a higher risk of the spread of infectious diseases. (PAX, 2015, p.38)

Due to the civil war and the devastating damage of buildings, a large quantity of rubble and debris occurred in many neighbourhoods in Syria. By the end of 2013 it was estimated that at least one third of the houses had been destroyed, releasing toxic substances. It is crucial to

underline that “*in the old city of Aleppo, a UNESCO World Heritage Site, artillery fighting and the use of barrel bombs has partially or fully destroyed 52 percent of the city’s housing stock.*” In addition, conflict rubble, including household waste, medical waste and the additional hazardous material may have severe impacts in a long term regarding the pollution around dumping sites. (PAX, 2015, p.40)

### 3.3.3. Intense use of weapons

Munitions, explosives can lead to environmental contamination as such materials include hazardous elements. Heavy metal cannot break down in the natural environment, for this reason they can cause severe contamination in the soil and in the water. The use of explosive substances may lead to chemical and biochemical transformation, risking the ecosystem. (PAX, 2015, pp.48–49) The Syrian Arab army used “*conventionally used weapons and also barrel bombs, large oil drums, gas cylinders, and water tanks, filled with high explosives such as RDX, TNT and scrap metal for fragmentation effects*”. It is argued by the *Organisation for the Prohibition of Chemical Weapons* (OPCW) that chlorine gas was used in barrel bombs; causing death and damage to the environment (see Appendix I.). (PAX, 2015, pp.51–52)

However, as previously mentioned the use of chemical weapons is restricted under international law. The 1925 Geneva protocol and the 1993 Chemical Weapons Convention prohibit the “*use of poisonous gas as a weapon of war*”. (Plumer, 2013)

According to the Congressional Research Service it is claimed that Syria started stockpiling chemical weapons either in 1972 or 1973, “*when Egypt gave the country a small number of chemicals and delivery systems before the Yom Kippur War against Israel*”. (Plumer, 2013) Later, the Soviet Union also delivered chemical agents in the country. The report also mentions that “*Syria is also likely to have procured equipment and precursor chemicals from private companies in Western Europe.*” (Plumer, 2013)

The CWC entered into force in 1997, and under the convention, the *Organisation for the Prohibition of Chemical Weapons* (OPCW) was established in order to monitor the implementation and the verification of the provisions. During the last two decades, many countries signed the Convention; however, Syria did not do it as it was aiming to balance Israel’s nuclear capability with acquiring chemical weapons. As Ralf Trapp, who is an International Disarmament Consultant describes “*beginning in February 2012, the*

*government and the opposition began accusing each other of using chemical weapons". After an investigation, a UN team confirmed that chemical weapons have been used in the areas around Damascus in Ghoutta. (Trapp, 2014, pp.2–3)*

On the 21th August of 2013 it was reported the chemical weapons were used in the suburbs of Damascus is Ein Tarma and in Zamalka (see Appendix II.). Different agencies and organisations claimed different numbers regarding the death toll and the injured people: *"while activists initially said about 300 people had been killed, by the end of 21 August the main opposition alliance had put the death toll at more than 1,300."* (BBC, 2013)

In September 2013, Secretary of State John Kerry and the Russian foreign minister Sergei Lavrov agreed to eliminate Syria's chemical weapons arsenal. (Arutz Sheva, 2016) UN Secretary General Ban Ki-moon and OPCW Director-General Ahmet Üzümcü worked together in order to provide recommendations for the Joint Mission. Later, *"the recommendations were presented by the UN Secretary General to the Security Council in a letter on 7 October and subsequently endorsed by the Council."* (OPCW-UN Joint Mission, n.d.) Syria became the 190th party of the CWC on 14 October, 2013. (Trapp, 2014, p.1) The OPCW-UN Joint Mission was officially established on 16 October 2013 in Syria. (OPCW-UN Joint Mission, n.d.)

The United Nations Environmental Programme (UNEP) has been providing environmental advice and support for the elimination of the chemical weapons. Colleagues from the UNEP met with Syrian officials in Damascus in order to discuss the environmental concerns and issues. Regarding the ground transportation of the chemicals, the Syrian authorities were responsible. According to the CWC the transportation and the destruction of chemical weapons has to be achieved with the protection of the environment and it claims that *"the procedure followed to fulfil these obligations must comply with national safety and environmental standards."* (Organisation for the Prohibition..., n.d.) Denmark and Norway provided cargo vessels, while Russia and China provided naval escort vessels aiming to address environmental regulations. (OPCW-UN Joint Mission, n.d.)

However, in April 2014 it was declared that at least 800 tons of chemicals were to be dumped into the Mediterranean Sea by the US forces. Experts warned that Syria's chemical weapons can have serious damage to the ecology and kill the fishes in a long-term. It was also argued that *"the dissemination of Sarin nerve gas may have long-lasting effects on the sea's natural ecology. The Sarin is composed of phosphorus and oxygen and the process of decomposition*

*of the compound ultimately leaves phosphoric acid.*” (Dvorin, 2013) The destruction of these weapons had to be realised in the sea as “no country agreed to carry out the act on its territory or territorial waters.” (Dvorin, 2013)

After two years of work, Syria’s chemical weapons have been eliminated. “*One hundred percent has been destroyed*”, the OPCW spokesman Malik Ellahi declared in January 2016. However, later the OPCW argued that chlorine and mustard gas was used in Syria and the government and also the ISIS has been accused of the employ of chemical weapons in the civil war. Overall, 1,300 metric tons of chemical weapons have been eliminated, and the big part of it was neutralised on the U.S. Navy ship MV Cape Ray. (Arutz Sheva, 2016)

Overall, the OPCW-UN Joint Mission was successfully completed, even though the country was facing and still facing dangerous circumstances due to the ongoing civil war. (OPCW-UN Joint Mission, n.d.) It is important to highlight that it was the first time that such program had to be achieved in times of civil war, causing several “*political, practical and legal challenges*”. (Trapp, 2014, p.4) The OPCW won the Nobel Peace Prize in 2013 for its achievement in Syria. (Arutz Sheva, 2016)

In conclusion, the environmental impacts of the Syrian civil war have to be high lightened. Aleppo, Deirez-Zor and Adra provides locations for heavy industries and their attack caused and in the futures they may cause direct long-term impact on the environment with the contamination of soil, and ground and surface water.

The Syrian conflict is very complex, involving many actors, and at the moment is it difficult to predict when it will be over. The last five years of war have already led to environmental degradation threatening the civilian population and the ecosystem. Currently the media and the international political arena are even more concerned about the humanitarian crisis and the refugee crisis. (PAX, 2015, p.60) The involved states, international organisations and also the civil society should include the discussion about the linkage of the war and the environmental impact on the society in Syria and they should be encouraged to cooperate in order to decrease the environmental degradation within the country. (PAX, 2015, pp.64–65)

## Conclusion

### *Overview*

This paper has focused on the environmental protection of armed conflicts in the Mediterranean. As it has been discussed in Chapter 1, wars may have serious short and long term impacts on the environment. The military technology increasingly developed during the past century, and the current large expenditures for military research and development may also cause severe damage to the nature. The biggest concerns are related to the weapons of mass destruction, especially to nuclear, chemical and biological weapons. Even though there are numerous international agreements banning the employ of such weapons, in several international and non-international armed conflicts chemical weapons have been used. A nuclear war, or in other terms a nuclear winter, could cause total environmental devastation and humanitarian catastrophe.

The international community is more and more aware and it recognises that the environment is an “essential interest”. However, there is no common agreement on the environmental consequences of several military operations due to the lack of scientific certainty. For example, there is no legal framework regarding the depleted uranium, as the international community does not share the same concerns. (Calpham and Gaeta, 2014, pp.479–480)

It is important to highlight that the awareness of the dangerous environmental degradation grew over the last few decades, and in parallel the field of international law went through a crucial process, as it has been widened and deepened. In Chapter 2, the evolution of the international humanitarian law and international environmental was demonstrated. As it has been discussed above, general rules of international humanitarian law, both treaty law and customary law can be applied during armed conflict in order to protect the natural environment. As there is a lack of provisions which are directly protecting the environment in armed conflict, it is important to verify those which are offering indirect protection. For this reason, human rights can be very effective for several reasons. First of all, there is a high public pressure due to violations in armed conflict; meanwhile the public awareness is very low regarding the environmental damage. Furthermore, international humanitarian law has a big scope and it includes different rights. Moreover, the human rights’ aim is to protect groups and individuals as well. (Loets, 2012, p.134)

It can be claimed that warfare will not be eliminated from societies in the near future, thus, it is indeed, to provide a better protection for the environment in times of armed conflict. Therefore the legal framework must be better disseminated, implemented, and enforced. In addition, several rules must be clarified, in order to apply them in an adequate and relevant way. Overall, international humanitarian law is lacking three key elements. First of all, the definition of environmental damage is “*too restrictive and unclear*”. Secondly, from a legal perspective, it is uncertain which element of the environment is considered as civilian objects. Last, but not least the principle of proportionality which is related to the “*collateral damage*” is not clearly defined. (Bothe et al., 2010, p.569)

In the second section of Chapter 2, international environmental law (IEL) and international organisations dealing with environmental protection was discussed. As we have seen above, the application of IEL in times of armed conflict is problematic for several factors. IEL is a recent body of law, and it is still under process of development. Currently IEL provides mainly regulations about the prevention of environmental damage. For example, the Vienna Convention/Montreal Protocol regulates the protection of the ozone layer, while the Framework Convention and Kyoto Protocol include how to fight the climate change with the reduction of emissions. (Wyatt, 2010, p.603) Overall, in post-conflict period and peace building, natural resources and also the environment are necessary factors as environmental damage can prevent people to get back to their “normal” and peaceful life. (Bothe et al., 2010, p.576)

As we have shown in Chapter 2, there are numerous national and international organisations working in the field of environmental protection and peace building. In my opinion, the most relevant institutions are the *United Nations Environment Programme* (UNEP), the *International Law Commission* (ILC), and the *International Committee of the Red Cross* (ICRC). The institutional framework and the achievements of the mentioned organisations were analysed.

The last twenty-five years, we can observe that there is a renewed interest regarding the environmental protection during armed conflicts. This concern was also an important topic at the 1992 UN Conference on Environment and Development in Rio de Janeiro. One of the six priority issues of the UNEP regarding the environmental challenged of the 21st century is the topic of “disasters and conflicts”. In 2009 the ICRC and UNEP coordinated a workshop in Nairobi, in order to reflect on the 1994 Guidelines. Later, the same year Ban Ki-moon, the



Secretary General of the UN urged member states to “*clarify and expand international law on environmental protection in times of war*” at the occasion of the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict. (Calpham and Gaeta, 2014, pp.484–485)

However, many of these institutions are facing numerous gaps, and we must admit that they will continue to exist. There is a lack regarding an agreed mechanism for victim assistance and compensation in environmental damage during armed conflicts. In addition, there is no permanent monitoring mechanism which could have a mandate on the issues mentioned above. It is necessary to change the international rules in order to accommodate them to the reality of modern armed conflicts. Furthermore, the establishment of new criminal mechanisms to punish violations would be an important step in protecting the environment.

For Chapter 3, I selected three armed conflicts which took place in the Mediterranean. The main aim was to analyse the case studies from an environmental and from a legal perspective. First, I discussed the 1990–1991 Gulf War, then the 2006 Lebanon War, and finally the Syrian Civil War. As it was pointed out in every section, the damage due to armed conflicts, including military operations and oil spills, had severe consequences on the environment. During the Gulf War a huge amount of carbon dioxide occurred from the oil fires, causing soil and air pollution. The *United Nations Compensation Commission* (UNCC) was established in order to make Iraq pay for the damaged. In 2006, the Israel-Lebanon War, led to the contamination of agricultural, commercial and infrastructure damage. In consequence of the Jiyeh power plant’s attack, a huge amount of oil spilled into the Mediterranean Sea contaminating the water and killing several species.

My third case study was the Syrian Civil War, but as it is still ongoing, it is problematic to analyse its environmental and ecological consequences. Oil pipelines and infrastructures were attacked several times, causing water and soil contamination. It was reported in August 2013, that chemical weapons have been used, causing death and environmental damage as well. The OPCW-UN Joint Mission was established in order to eliminate Syria’s chemical weapons, which carried out a successful mission. However, it is crucial to emphasise that the Syrian Civil War is very complex, as it involves many actors with different interests. On the one hand, the humanitarian crisis and refugee crisis is a central topic in the international political arena. On the other hand, the environmental impacts of the war are not yet well studied; therefore it is imperative to conduct further research. In the future, I would like to do more

research on the protection of the environment in times of armed conflict, as I would like to make the World a better place.

### ***Recommendations***

In 2014, at the occasion of the “International Day for Preventing the Exploitation of the Environment in War and Armed Conflict” Ban Ki-moon recalled the international community to “*protect the environment from the impacts of war, and to prevent future conflicts over natural resources.*” (United Nations, 2014) The Secretary General also added, that different tools “*from dialogue and mediation to preventive diplomacy*”, necessary for peacebuilding and sustainable development (see Appendix IV.). (United Nations, 2014)

In the followings, I would like to discuss a research made by the ICRC in order to define the gaps and weaknesses regarding the protection of the environment in times of armed conflicts. The ICRC’s aim was to give further possible solutions for improving the legal framework. Overall, eight different fields can be mentioned for further evolution. (Calpham and Gaeta, 2014, p.485)

#### *1. Disseminating, implementing, and enforcing the law.*

One of the most important steps can be realised by states and international organisations, which should do further development in order to better disseminate, implement and enforce the existing rules. It is crucial to renew the ICRC’s *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*. The mentioned Guidelines were submitted to the UN in 1994, but it did not get a formal approval. However, the UN General Assembly urged all states to disseminate the Guidelines widely and “*to give due consideration to the possibility of incorporating them into their military manuals and other instructions addressed to their military personnel*”. The Guidelines should be reviewed and new treaties may be included which would reflect on the evolution of customary international law. (Calpham and Gaeta, 2014, p.485)

#### *2. Clarifying the law.*

There is a big basis for the legal framework regarding the environmental protection of armed conflict. However, numerous rules could be clarified, such as the principle of proportionality.

In addition, the concept of “*widespread, long-term and severe damage*” should be clearly defined in the interest of having a practical value. (Calpham and Gaeta, 2014, pp.485–486)

### *3. Further developing the law of non-international armed conflict.*

We must admit, that today most armed conflicts have a non-international character, for this reason specific norms of the law of non-international armed conflict must be developed. (Calpham and Gaeta, 2014, p.486)

### *4. Place-based protection.*

The protection of environmental areas can be better achieved if the natural environment would be seen as a civilian object in the case of the presence of the combatants. The Protocol III of 1980 (on Prohibition or Restrictions on the Use of Incendiary Weapons) to the CCW, which restricts:

*“To make forests or other kinds of plant cover the subject of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives”.* (Calpham and Gaeta, 2014, p.486)

The proposal regarding the protection of publicly recognised reserves was received enthusiastically, but finally it was dropped. The International Council of Environmental Law and the Commission on Environmental Law of the International Union for the Conservation of Nature carried out a *Draft Convention on the Prohibition of Hostile Military Activities in Protected Area*. The Draft Convention said that the further resolution adopted by the Security Council in reply to an armed conflict must include a table of “*relevant internally protected areas*”, which means that hostile military activities are prohibited in such areas. Unfortunately, the draft did not have any impact; however the UNEP and the ICRC have renewed the idea lately to giving place-based protection to areas of high environmental value. (Calpham and Gaeta, 2014, p.486)

### *5. International cooperation.*

After environmental damages, even though it can be very challenging, there is an urgent need to clean up the affected areas. Two cooperation schemes, which regulate the international cooperation and assistance, may be used as models: 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their

Destruction and the 2008 Convention on Cluster Munitions. (Calpham and Gaeta, 2014, p.488)

#### 6. *Victim assistance.*

Victims of environmental damage should get protection even if it is material or non-material. Natural environment and natural resources are not just crucial for the present, but also for future generations. In case of an environmental damage or the depletion of resources, the affected civilians are obliged to reconstruct their livelihoods, which can cause struggle. The *Convention on Cluster Munitions* urges each state party to “adequately provide age-and gender-sensitive assistance, including medical care, rehabilitation and psychological support, as well as provide for their social and economic inclusion”. The victim assistance is highly important, however, it is important to recognise, that the mentioned provisions can be implemented after the environmental damage. (Calpham and Gaeta, 2014, p.488)

#### 7. *Compensation.*

In order to provide victims with compensation, it is crucial to develop further mechanisms. Liability for violation or the needs of victims could give the basis for these compensation schemes. (Calpham and Gaeta, 2014, p.489)

#### 8. *International monitoring.*

Armed conflicts may cause serious environmental damage, and for this reason international mechanisms should also be created with regard to monitor and assess the nature and extent of the damage. On the institutional level, UNEP has proposed that a “*permanent UN body to monitor violations and address compensation for environmental damage (...) be considered*”. The establishment of such body would have a positive and effective impact on the development of the mentioned proposals above.

The following mandate could be given to such body:

- *“Investigate and decide on alleged violations of international law during international and non-international armed conflicts;*
- *Handle and process compensation claims related to environmental damage and loss of economic opportunities as well as remediation activities;*
- *Develop norms and mechanisms on victim assistance, international assistance, and cooperation to assess and redress the environmental consequences of armed conflict”.*

In conclusion, the natural environment is crucial to our livelihood and for our well-being; therefore it is imperative that the international community addresses the issue of the protection of the environment in time of armed conflict more seriously. First of all, it is essential to conduct further research on the environmental impacts caused by the war; moreover information and data's should be exchanged in order to be able to monitor the environmental damage. Secondly, environmental awareness must be raised, and mechanisms of response and assistance must be developed. Information collection, risk assessment and risk mitigation are the three key elements to work on. Thirdly, the legal framework – International Environmental Law and International Humanitarian law – to protect the environment in times of armed conflict should be also improved.

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## List of Abbreviations

CTBT	Comprehensive Nuclear Test Ban Treaty
CWC	Chemical Weapons Convention
DCs	Developed countries
DU	Depleted Uranium
ENMOD	Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques
IHL	International Humanitarian Law
IEL	International Environmental Law
ICRC	International Committee of the Red Cross
ILC	International Law Commission
IMO	International Maritime Organisation
LDCs	Less developed countries
LOSC	Law of the Sea Convention
MEAs	Multilateral environmental agreements
NIAC	Non-international armed conflicts
OPCW	Organisation for the Prohibition of Chemical Weapons
ROPME	Regional Organisation for the Protection of the Marine Environment
UN	United Nations
UNCC	United Nations Compensation Commission
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNSCOM	United Nations Special Commission
UXO	Unexploded ordinance
WHC	World Heritage Convention
WMD	Weapons of Mass Destruction

## List of Tables and Figures

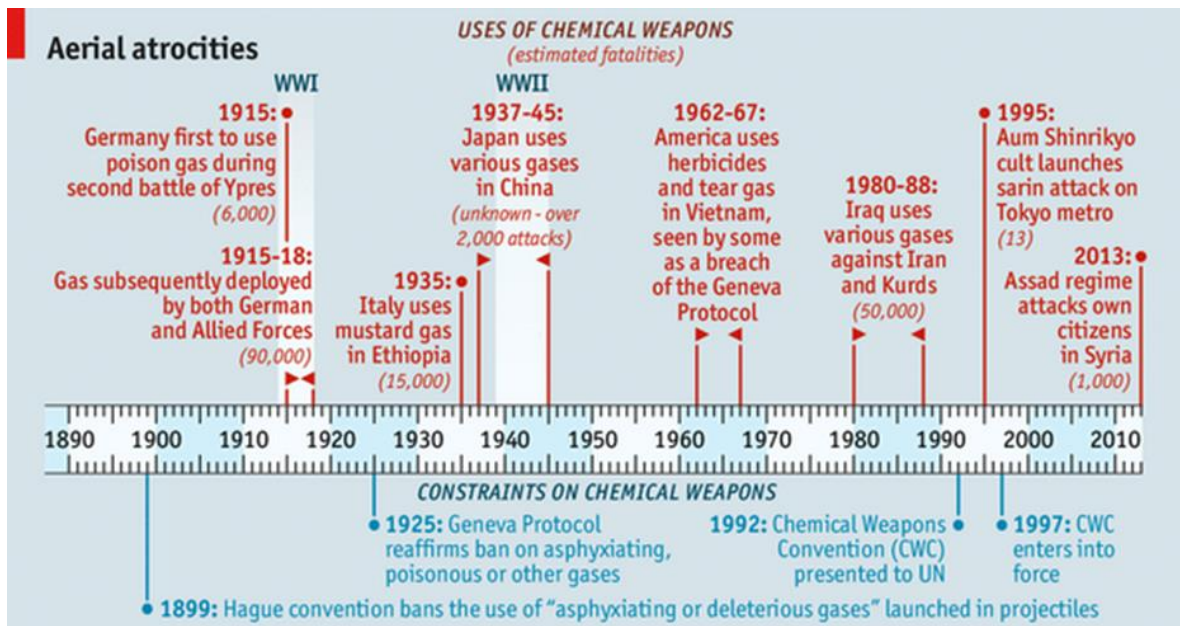
**Figure 1:** Model: Causality flows

**Table 1:** Summary of recommended awards for monitoring and assessment claims

**Table 2:** Main Laws-of-War Treaties – Participation of 14 States Involved in the Gulf Crisis of 1990-91.

Appendices

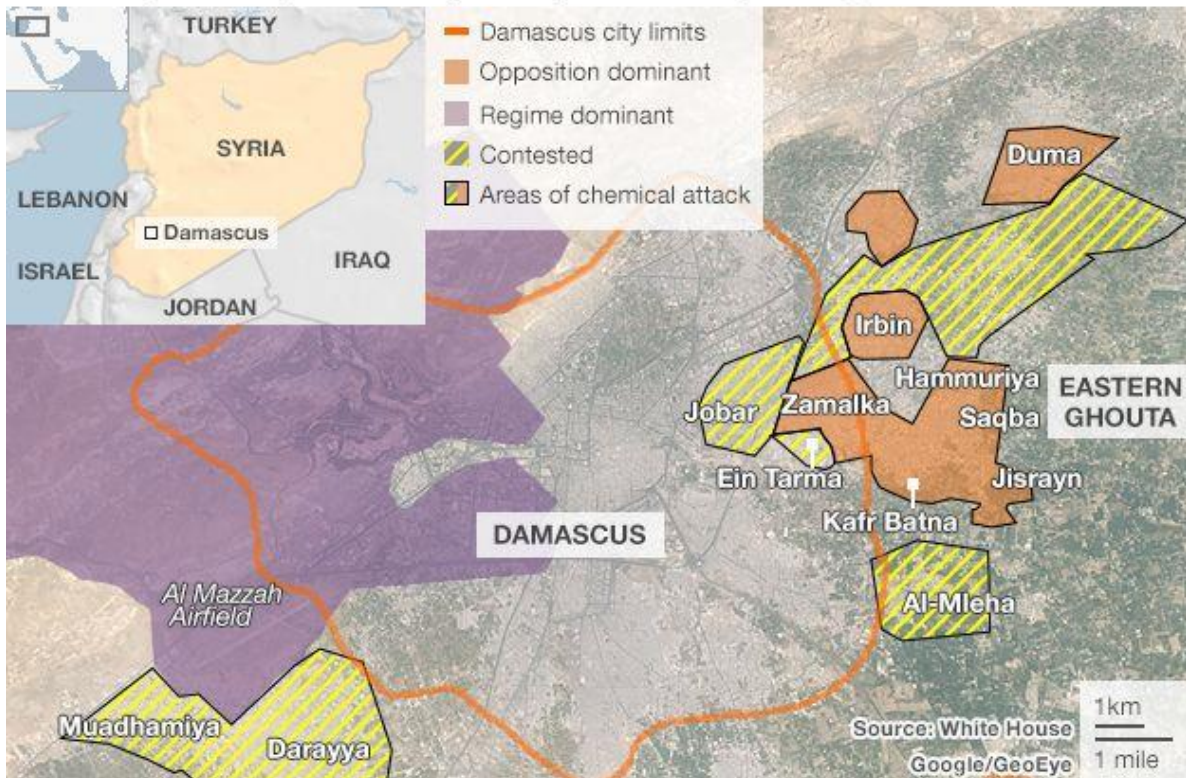
Appendix I. – Uses of Chemical Weapons



Source: Plumer, 2013

Appendix II. – Syria chemical attack

US intelligence map: Areas reportedly affected by 21 August chemical attack



Source: BBC, 2013

## Appendix III. – International Day for Preventing the Exploitation of the Environment in War and Armed Conflict

United Nations

A/RES/56/4

**General Assembly**Distr.: General  
13 November 2001Fifty-sixth session  
Agenda item 171

### Resolution adopted by the General Assembly

*[without reference to a Main Committee (A/56/L.8 and Add.1)]*

#### 56/4. Observance of the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict

*The General Assembly,*

*Recalling* the United Nations Millennium Declaration,<sup>1</sup> which emphasized the necessity of safeguarding nature for the sake of future generations and working for the protection of our common environment,

*Considering* that damage to the environment in times of armed conflict impairs ecosystems and natural resources long beyond the period of conflict, and often extends beyond the limits of national territories and the present generation,

*Recalling* Article 2, paragraph 4, of the Charter of the United Nations, which states that all Member States shall refrain from the threat or use of force against the territorial integrity of any State in their international relations,

1. *Declares* 6 November each year as the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict;

2. *Invites* Member States, entities of the United Nations system and other international and regional organizations to observe 6 November each year as the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict;

3. *Requests* the Secretary-General to ensure the implementation of the present resolution and to promote it in the international community.

*37th plenary meeting  
5 November 2001*

Source: General Assembly, Resolution. Retrieved from  
[http://www.un.org/en/ga/search/view\\_doc.asp?symbol=A/RES/56/4](http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/56/4)  
(Accessed: 27 January 2016.)

**Appendix IV.** – International Day for Preventing the Exploitation  
of the Environment in War and Armed Conflict – 6 November

Secretary-General's Message for 2014

*“The environment has long been a silent casualty of war and armed conflict. From the contamination of land and the destruction of forests to the plunder of natural resources and the collapse of management systems, the environmental consequences of war are often widespread and devastating.*

*Armed conflicts are becoming ever more complex, and require solutions that address the root causes. Issues of poverty, vulnerability to climate shocks, ethnic marginalisation and the transparent, sustainable and equitable management of natural resources must be considered within and alongside peace agreements if we are to build more resilient and prosperous societies.*

*On this international day, let us reaffirm our commitment to protect the environment from the impacts of war, and to prevent future conflicts over natural resources. These challenges are even more urgent as the international community formulates the post-2015 sustainable development agenda.*

*We must use all of the tools at our disposal, from dialogue and mediation to preventive diplomacy, to keep the unsustainable exploitation of natural resources from fuelling and financing armed conflict and destabilising the fragile foundations of peace.*

*Let us develop solutions that meaningfully involve local communities and build on our collective knowledge to advance good stewardship of the environment as an integral part of peacebuilding and sustainable development.” (United Nations, 2014)*

Ban Ki-moon

\* \* \*

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<http://culturalrelations.org>  
[institute@culturalrelations.org](mailto:institute@culturalrelations.org)

Tóth, V. A., 2016. Protecting the environment during armed conflict in the Mediterranean: The 1990–1991 Gulf War, the 2006 Lebanon War, and the Syrian Civil War. *Cultural Relations Quarterly Review*, Vol. 3. Issue 2. (Spring 2016) pp.1–61.

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